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Original Communications.

PILOCARPINE IN ERYSIPELAS.

By G. Walter Barr, M.D.,

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THE recent article on pilocarpine administered hypodermically in erysipelas,* by Dr. Salinger, has its main facts corroborated in my own experience. In 1883 I heard Professor J. M. Da Costa teach the use of pilocarpine carefully administered for this disease, and have used it ever since with the most gratifying results. It has failed but once in my hands, and then probably for reasons which will be elaborated later. After a small experience with the method of dynamic doses administered at regular intervals, I am constrained to retain the details of Da Costa's method as giving best results. This is the administration of a dose sufficient to produce a marked physiological action, repeated in two hours, again in six hours, and finally in two hours more—*i.e.*, in two, eight, and ten hours from the initial dose—with the hypodermic syringe. I think I have discovered that the efficacy of this treatment depends upon the time which has elapsed from the inception of the first symptoms of the

* Therapeutic Gazette, March 15, 1894, p. 154.

disease. My most brilliant successes have been in the cases seen very early, and the only failure in a case of a week's standing, while the time required to effect a cure has been in direct ratio to the duration of the disease before the treatment began. The rule has been that in twelve hours from the first injection local convalescence is established and the systemic symptoms are rapidly disappearing. In cases seen later it has been necessary to repeat the whole procedure after an interval of six or eight hours from the last dose. In no case, except the one mentioned, has it been necessary to further repeat the hypodermic injections, although I continued fluid extract of pilocarpus per orem in a number of cases as a precautionary measure. The average duration of the disease has been about three days. In one case erysipelas attacked the location of an epithelioma as large as an egg upon the cheek of an old man, the symptoms being typical and well marked, and the characteristic inflammation of the skin extending over the frontal region. The objective inception occurred one evening; the extension of the skin pathology had reached the above extent by noon of the next day, when the treatment began. Twenty-four hours afterwards the disease had apparently disappeared, and a day later, or forty-eight hours after the acme of the objective signs, I removed the superior maxillary bone, which I found involved by the epithelioma, as well as much of the cheek; there was no return of the erysipelas. I have noticed no difference in the results in cases certainly traumatic from those in cases apparently idiopathic.

The dose used has been sufficient to cause sweating and salivation, and ⅙ grain usually in the beginning. In the case in which it failed the drug was pushed as far as the cardiac depression would allow. In different individuals pilocarpine produces a variable amount of effect upon secretion in the skin and the salivary glands, sometimes one and sometimes the other dominating. I have been unable to distinguish a difference of therapeutic effect, depending upon the quantity of perspiration as distinguished from the quantity of saliva excreted. When the dynamic action of the drug was manifested by great salivation and little perspiration, the remedial effect was apparently the same as when the perspiration was great in quantity and the salivation less; this seems to dispose of the hypothesis of Salinger that the sweat washes out the bacilli through the enlarged pores. How the drug cures erysipelas I have been especially anxious to discover; it has been an unsuccessful quest. It seems probable that somewhere in the sympathetic nervous system the secret is hid, but each hypothesis has been discarded in turn. Perhaps light will ultimately come through the pathologist and more definite data about the disease.

I have been surprised at finding practically nothing in medical literature on this subject. No claims to originality are made. I learned the method from Da Costa's lectures in the Jefferson Medical College, and as Salinger gives him credit as the originator, to him is the honor due. To corroborate the clinical experience of Salinger and to emphasize the necessity of full dynamic doses, repeated at certain intervals, and the early initiation of the treatment, is the object of this paper, which is based on about forty cases.

THE DIFFERENT FORMS OF DIABETES MELLITUS, WITH REMARKS ON TREATMENT.

A Clinical Lecture delivered at the Philadelphia Hospital, with Additions from a Clinical Lecture delivered at the Polyclinic Hospital.

By Solomon Solis-Cohen, M.D.,
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GENTLEMEN:—These two patients are brought before you that they may be compared and contrasted. What is the first point of difference between them noted by the class? Some one answers correctly that one is very stout and the other very thin. What other difference is there? Again, I am correctly answered that the stout patient appears to be much older than the thin patient. Inquiring now for specific data as to these differences in age and weight, we learn that Philip M. is sixty-seven years old, and weighs now, as for many years, two hundred and five pounds; while Peter M. has not quite completed his thirtieth year of life, and weighs at present but one hundred and twenty pounds, having lost about sixty-five pounds in some eighteen months.

Peter is a native of Ireland. His father, always strong and hearty, died of an acute illness, the nature of which he does not remember. His mother died of old age. So far as he knows, there is no history of gout, rheumatism, cancer, consumption, or neurosis in the family. It will not do, however, to lay too much stress on negative evidence in the cases of patients of this class. Peter has been a hard drinker for ten years. Beer is his "favorite vanity," and he used to get drunk

regularly every fortnight. He denies any venereal disease, and we find no evidence of syphilis. For several years, in the course of his daily work as a wagon-driver and stevedore, he has been exposed to all vicissitudes of weather. He fractured his right humerus sixteen years ago and again three years ago. With this exception, he knows of no serious illness or injury previous to the gradual loss of strength and weight, which he dates back about two years. Until then he had weighed one hundred and eighty-five pounds, was strong, and considered himself healthy. After he began to fail he noticed that he was passing water more frequently and in greater quantity than formerly. He was troubled with inordinate thirst, that neither beer nor water could quench. Six months ago his craving for food became similarly insatiable.

While general feebleness has been progressive, for about a year there has seemed to be especial weakness in the muscles of the legs. He is quickly fatigued by walking or by mounting stairs, and recently he complains of almost constant dull, aching pain from the knees down. For some three months there has been soreness and a sense of muscular feebleness in the lumbar region, and sexual power has been lost for about the same length of time.

He had not sought medical aid prior to his admission to this hospital, February 2, 1894, when the following notes of his physical condition were made by the resident physician, Dr. Stewart:

"The patient is moderately tall and slim, even emaciated; weight, one hundred and twenty pounds. The bony framework of the chest is prominent through loss of soft tissues. There is much depression both above and below the clavicles. The circumference of the chest at the nipple line, on forced expiration, is thirty-two and a half inches; on forced inspiration, thirty-three and a half inches. There is an up-and-down movement of the thorax as a whole, and breathing is principally diaphragmatic. There is supraclavicular dulness, especially on the right. There is some fulness of the chest, anteriorly, above the nipple line, and percussion elicits high-pitched tympany, more marked upon the right. Percussion note is impaired below the nipples on both sides. Posteriorly, there is hyper-resonance on percussion over both sides of the chest. On auscultation there is found over the upper portion of both lungs, anteriorly, bronchial breathing, with much-prolonged expiration; the quality is more tubular at the left. Over the lower portion on both sides the breathing is harsh and somewhat puerile in quality. Posteriorly, the breathing is exaggerated, and there are a few sonorous râles at the left upper chest. Vocal resonance is exaggerated, especially over the upper part of the right chest, anteriorly, and vocal fremitus is likewise increased. Liver dulness is diminished. Splenic dulness cannot be well made out. Cardiac dulness is slightly diminished. The apex-beat of the heart is feebly discernible on inspection and palpation, in the fifth interspace, slightly inside the nipple line. The heart's action is rapid (84) and feeble. The first sound is short and impure, wanting in clearness and force, and the second sound, while relatively accentuated, lacks tone. There is general muscular wasting, especially in the legs. The grasp of the hands is enfeebled. There is no tactile, dolorous, or thermic anæsthesia. Knee-jerk is lost on both sides. Muscle-jerk can be developed on right side, but is absent on left. There is no ankle clonus. Pain is complained of, and there is tenderness to pressure in both calves and in the thighs along the course of the sciatic nerves. The soles of the feet are exquisitely tender, and the patient states that they frequently 'fall asleep,' with tingling as of 'pins and needles.' There is no pain or tenderness in the upper extremities. The site of fracture at the lower third of right humerus is marked by considerable callus. Gait and station are normal. There is no vertigo or loss of vision. There is no pruritus."

He tells us that he has not had furuncles or ulceration of the throat. He has an easy daily stool. His tongue is red at the edges, flabby, and coated with a whitish fur, in which appear bare, red, glazed patches. He has some belching, water-brash, and flatulence, though these symptoms have lessened since his diet was regulated.

Now, what further data do we need before diagnosticating this case? A member of the class answers, "The urine should be examined." And what would you expect to find in the urine? "Sugar, and possibly albumin and casts," is the correct reply. We have not found albumin or casts, but we have found a large quantity of sugar, within a small fraction of ten per cent. before regulation of diet and nearly six per cent. since the diet was restricted. As the man passed two hundred and fifty to two hundred and sixty-five ounces of urine, and is still passing about one hundred and sixty ounces, daily, this means an average daily excretion of nine and a half ounces of sugar, even under dietetic treatment.

The diagnosis, then, is, as the class sug-

gests, *diabetes mellitus;* but we have also some complicating conditions. The pain, tenderness, and disturbances of sensation in the lower extremities, together with the loss of knee-jerk, point to a polyneuritis which may be alcoholic in this instance, but which is not uncommon in diabetics. Indeed, double sciatic neuritis, such as this patient presents, should always make the physician suspect the existence of diabetes mellitus. We will have electrical examination of the muscles made for completeness of record. The pulmonary conditions seem at first somewhat confusing and contradictory. On further questioning, the man tells us that he has had shortness of breath on exertion for some time, and that it is increasing, but he has attributed this to general weakness. He likewise answers that he has occasional cough and expectoration. Dr. Stewart supplements this with the record of examination of the sputum, which is, however, negative,—that is to say, neither lung-tissue nor tubercle-bacilli were found. The sputum is muco-purulent. I think we are justified, from the physical and rational signs taken together, and with our knowledge of the usual course of events in diabetes, in concluding that there is beginning tuberculous infiltration in the emphysematous lungs of this patient. This combination of tubercle and emphysema will account for the apparent contradictions in the percussion phenomena. The heart is evidently dilated, and probably as a result of three causes,—emphysema, diabetes, and alcoholism. The liver is probably cirrhotic as a result of alcoholism. As yet there is no œdema and no ascites. The combination of diabetes and cirrhosis of the liver is not common, and is, I think, a mere coincidence. Conditions leading to enlargement of the liver are more frequently causally related with diabetes. I should not be surprised to find evidences of nephritis, but they have not yet been discovered. We will have his eyes examined to see whether he has either albuminuric retinitis or any of the characteristic lesions of diabetes.

Philip M. is a German by birth, is sixty-seven years of age, and has been a shoemaker. He, too, has generously indulged his liking for beer. The record states that he drank fifty or sixty glasses a day, but I don't suppose that means every day. At all events, he hasn't had anything like that much since his entrance into the hospital, April 12, 1893.

At that time he complained of dyspepsia, shortness of breath, and hemorrhoids. He then stated that his father had been affected similarly, and had died at the age of fifty-nine. His mother had been subject to attacks of dyspnœa, and died from an unknown cause. Two brothers were living, one healthy and one in about the same condition as himself. He knew nothing as to hereditary diseases in his family. He states that he has had none of the diseases of childhood. As a young man he had a severe attack of acute articular rheumatism, and ever since has had milder attacks at varying intervals. Ten years ago he had lobar pneumonia. At different times during the last fifteen years he has had œdema of the lower extremities. At one time—we can get no more definite data—he had epileptic attacks, falling unconscious, frothing at the mouth, biting the tongue. The attacks were preceded by an aura, a "warm wave" passing up the back of his neck to his head. They were followed by transient loss of vision. He has had no attack for two years.

At the time of admission the physical examination of the patient showed the liver to be considerably enlarged, smooth, and resistant. The heart was slightly enlarged, slow, and feeble, the sounds indistinct. My colleague, under whose care he came, made a diagnosis of fatty liver and fatty heart, and instituted appropriate treatment. Nothing significant was found in the urine until some six months ago, when, in the course of routine examination, it was found to contain considerable sugar. There was not then, and is not now, excessive thirst; appetite is good, but not inordinate; there has been no furunculosis, no ulceration of mucous membranes, no pruritus. There is polyuria, ninety to one hundred ounces *per diem*, but it appears that the patient had not noticed this fact until told to measure his urine before dieting and after dieting. At present there is about two and eight-tenths per cent. of sugar in the urine.

The diagnosis, therefore, as in our other case, is diabetes mellitus; but unless the urine had been examined in regular course, there was nothing in the clinical history of the case, so far as learned from the patient, to suggest this condition, which has apparently developed since the patient's entrance into the hospital.

We will now allow the patients to leave the room, and continue our discussion of the resemblances and contrasts they exhibit. Both present the urinary phenomena of diabetes mellitus,—that is to say, they both persistently pass an abnormally large quantity of urine, which persistently contains sugar. Beyond this, however, there is little in common in the two cases. Philip passes only about twice the normal quantity of urine, and the average quantity of sugar

excreted daily is less than three ounces; neither thirst nor appetite is excessive; he is apparently well nourished, and despite the serious organic lesions discovered in his case his countenance does not exhibit any sign of distress. Peter passes an average of one hundred and sixty ounces of urine and nearly ten ounces of sugar daily. He is tormented with inappeasable thirst and with a craving for food that cannot be satisfied. He is rapidly wasting, his strength is failing, and anxiety is plainly written upon his face.

The French writers especially insist upon the difference between diabetes in the obese and diabetes in the emaciated, and that difference, it is held, is not merely one of degree, but of kind. Thus, in the cases before us it seems extremely probable that the nutrition of one patient has not suffered so much and that of the other so little in comparison merely because the one has a "more severe case" than the other of the same morbid process; but that the differences in the general clinical phenomena in the two cases are fundamentally connected with the emaciation in the one case and with the obesity in the other case; and that the morbid process in the case of the young and wasted man is unlike that in the case of the elder, well-preserved man. In other words, glycosuria, or the combination of polyuria and glycosuria, does not constitute a disease, but, like albuminuria, is merely a symptom that may occur in connection with several diseases, and the entire phenomena of the case—the rational symptoms—must be taken into consideration in diagnosis, prognosis, and treatment. All of the causes that may give rise to diabetes mellitus have not yet been discovered. It has followed infectious diseases, malaria in rare instances, influenza and syphilis more frequently. In such cases there is at least a remote toxic origin, but the mediate mechanism may be neural or visceral. So, too, in a class of cases frequently met with,—those in which the uric-acid diathesis or gouty dyscrasia seems to bear a causative relation to temporary glycosuria or to persistent saccharine diabetes,—while the noxa in the blood and tissues may be a remote excitant of the diabetic complexus, the mechanism of its production is probably neural or visceral, or, perhaps more correctly, neuro-visceral. When it shall have been decided whether or not gout is a neurosis, and what are the true relations of gout with disease of the liver, and whether hepatic disorder in gout is secondary to nervous disorder or the reverse, the problem in relation to diabetes will likewise be simplified. For diabetes may be produced experimentally through the liver or through the nervous system, or through the liver by way of the nervous system, as in Claude Bernard's celebrated experiment, and pathologically it is sometimes found associated with hepatic disease and sometimes with disease of the brain or of the sympathetic nervous system. Sometimes, however, no significant lesion is found at necropsies upon the subjects of diabetes.

But there is still another organ of great importance in the study of the etiology and pathology of diabetes, and more particularly in relation with what the French term *diabète maigre*,—diabetes with emaciation. That organ is the pancreas. Lancereaux long ago called attention to the comparative frequency with which lesions of the pancreas were found in cases of *diabète maigre*, and the recorded instances of such association are rapidly accumulating. When we remember that diabetes is not a common disease, though my personal experience would lead me to believe that its frequency is much underestimated and that many cases go unrecognized; when we remember, too, that necropsies are not always to be obtained, the number of recorded cases exhibiting pancreatic disease seems to be comparatively large. The lesion is usually sclerosis,—that is, interstitial pancreatitis,—with atrophy of the glandular tissue, and frequently with the presence of calculi and sand. Sometimes the duct of Wirsung is completely blocked with calcareous matter. Cystic and cancerous disease of the pancreas have likewise been associated with glycosuria and with diabetes mellitus. Furthermore, experiments made by Martin, Lépine, Von Mering and Minkowsky, and others have established the fact that, in dogs, extirpation of the pancreas, or artificial production of complete atrophy of the gland, will cause diabetes mellitus, while if a certain-sized portion of the gland be left uninjured, or if a graft of a certain-sized portion of pancreas be made in the abdomen of the animal, these symptoms either fail to develop or rapidly disappear. It has been claimed by Thiroloix that injury to the semilunar ganglion, to the solar plexus, or to the nerves connected with the pancreas has had much to do with the experimental results cited; but while he has proved that such injury may give rise to diabetes, the other experimenters named have apparently proved that diabetes may likewise be produced when injury to nerves has been carefully guarded against. So that present evidence goes to show that destruction of the pancreas, or of certain neighboring and attached nerves and ganglia, or of both pancreas and nervous structures, will cause in dogs

polyuria, glycosuria, polyphagia, and polydipsia, with progressive inanition and death; in other words, the phenomena of diabetes mellitus.

In the human being, general experience seems to show that diabetes in obese patients is usually gouty or hepatic in origin; in emaciated patients it is usually associated with nervous or pancreatic lesion, or, according to Thiroloix, is always neuro-pancreatic.

In such subjects, when a toxic origin cannot be assigned, and I include alcoholism among toxic causes, it will usually be found that they have been much exposed to cold weather, or that they have been subjected to severe mental or emotional strain, often, in the case of men, to both mental and emotional strain, as in the conduct of large enterprises involving overwork, anxiety, and fluctuations of spirit due to alternations of success and disappointment. The disease, it is true, is more common among women than among men, but if I may trust my own experience, women are more likely to exhibit the type of *diabète gras*,—diabetes with obesity. Thus, of seven diabetics now under my care in hospital and private practice, three are men, four are women; five are obese, of whom two are men and three are women. You have just seen one of the emaciated patients, and the other is not only the only woman exhibiting *diabète maigre* whom I have seen in the last five years, but she is a woman of business, of great activity. A farmer's wife, she runs the farm and a hennery and a dairy; comes into market twice a week, and stands there from early morning to late afternoon, disposing of her produce; and, until I forbade it, was in the habit of beginning her market-day drives into the city at three o'clock in the morning. She will not give up any of her work. The most that I could do was to get her to come to town the afternoon before market-day. I mention these details simply to show the type of persons who are liable to *diabète maigre*. One other point is worthy of mention. She has always had a great craving for sweet things, and you will often elicit this fact in men as well. I am not prepared to say positively whether this craving is itself an early indication of morbid tendency, or of actual disease too slight to give rise to urinary symptoms, or whether the indulgence in sweets is one of the factors that help to cause the disease in nervous persons; but I am more inclined to the opinion that the craving is from the first morbid. At all events, the fact is worth remembering. It is said, and I believe with reason, that persons of the Hebrew race are especially liable to diabetes mellitus. The explanation of the fact lies, I believe, in the high nervous tension caused by the centuries of persecution to which my people have been subjected, together with the greater development of mental and emotional than of physical nature which has always characterized them. But the strain of modern business life, especially in America, is causing diabetes to increase among all classes of the population, and in my own practice the number of Jews affected with this disease has been far less in actual count and no greater in proportion than that of persons of other races.

To return to our two patients. The difference in years between them is of great import in prognosis. Persons in whom the symptoms of diabetes mellitus develop before the age of forty recover so rarely that we may say the prognosis is absolutely bad. Persons who have passed the fortieth year of life before the symptoms develop recover so frequently that we may call the prognosis generally good. In both classes of cases, of course, individual conditions must be considered in estimating the degree of the favorable or unfavorable prognosis. Thus, while I have used the case of Philip M. in illustration of a certain group of cases in which the prognosis under favorable surroundings is usually good, yet the complications of the case and the comparatively large excretion of sugar which recurs from time to time make it of rather more serious prognosis than is usual in obese and elderly patients.

But before going further, let us see what we mean by recovery. Some cases are so mild that by simply instituting certain dietary restrictions, sugar disappears from the urine and the patient's general health and comfort are fully restored. Other cases require in addition some medication, temporary or continuous. Let the patient, however, disregard the dietary restrictions for any length of time and all the symptoms will return. There are exceptions to this rule, of course, but it is the general experience in the vast majority of cases of genuine diabetes mellitus. There are cases of mere temporary or intermittent glycosuria, or even glycosuria and polyuria, occurring, as a rule, in the obese, the elderly, and the gouty, and usually due to overeating, quantitative or qualitative, in which temporary restriction in diet will suffice, but we are not now considering such cases. By recovery, therefore, I mean a condition in which, under moderate dietetic restriction, sugar is absent from the urine, which is of normal quantity, and the patient is generally comfortable; but in which serious dietetic error will nevertheless bring about a renewal of symptoms. There is also a

condition of partial recovery, in which the patient continues to excrete a moderate quantity of sugar, say one or two per cent., the quantity of urine being slightly increased, say two quarts or a little more, and yet general health is apparently good. Patients may live to or beyond the Scriptural limit of threescore years and ten under these conditions, and probably in some instances their days are rather lengthened than shortened by their diabetes, because of the additional care they take of themselves. Now, provided the patient can and does take proper care of himself, the prognosis as to recovery or partial recovery, as I have defined these terms, is excellent if the patient be somewhat advanced beyond middle life when symptoms first appear, and good in all who have passed forty-five years, in the absence of specially unfavorable signs in the individual case. As a rule, the older the patient the better the prognosis, the younger the patient the worse the prognosis. Furthermore, the preservation of obesity is favorable, emaciation is unfavorable. Certainty that the case is of organic nervous origin is unfavorable, and functional neurosis is likewise unfavorable unless the exciting cause of nervous trouble—the overwork or anxiety—is removable; in which case, if the removal of the cause be not too late, the prognosis may be very good. Cases due to disease of the pancreas are of unfavorable prognosis. As a matter of course, the severity of special or general symptoms and the effect of diet and of other therapeutic measures modify the prognosis in individual cases.

The causes of death are most frequently pneumonia, pulmonary tuberculosis, and coma. The duration of unfavorable cases is from a few days to about five years, and I have known of favorable cases in which symptoms have been recognized for more than twenty years. In every case we must be on the alert to guard against coma, which may sometimes be precipitated by trifling causes, such as indigestion or slight chilling. In one case under my care the patient lay in a semi-comatose condition for three days following an attack diagnosticated by the previous attendant, a homœopathist, as "malaria," but which seemed to me to be an instance of the intermitting variety of influenza. This patient, I was told, had passed sugar in her urine for fifteen years prior to the attack noted, which occurred three years ago, and she is still living and well. What warned me to expect coma and to try to guard against it was the sudden disappearance of sugar from the urine. This is always a bad sign, not a good one. At the same time the urine reacted with ferric chloride, showing the presence of diacetic acid or β-oxybutyric acid, and was scanty in quantity. The therapeutic indication was the administration of warm drinks, alkaline diuretics, and diaphoretics, and the application of heat externally. Persistence in this course averted the development of complete coma, which would probably have been the precursor of death.

Throughout the management of a case of diabetes mellitus, therefore, examine the urine at regular intervals, not too far apart, and whenever its acidity increases, or the sugar is suddenly diminished or absent, or the wine-red color is developed by ferric chloride, administer alkalies freely until the urine is alkaline and the sugar reappears. Sodium bicarbonate may be given, or, if the quantity of urine is lessened, potassium acetate or potassium citrate, or some other diuretic. Some authorities, however, caution against potassium salts, believing them to be too depressing to the heart. Rochelle salt is often useful, because it will act either as a mild hydragogue purge or as a diuretic. And this leads me to say that constipation is often a precursor of diabetic coma, perhaps a cause. Never permit your patients, then, to be constipated. I am in the habit of giving to diabetic patients sodium phosphate in bulk, and directing them to take one or two teaspoonfuls in hot water before breakfast, or perhaps even two or three times a day, the quantity and frequency to be varied according to the effect upon the stools. Bartholow, indeed, recommends sodium phosphate as a remedy for diabetes mellitus, especially in obese subjects with hepatic disorder. Sometimes he combines with it sodium arsenate, $\frac{1}{64}$ grain to the drachm of sodium phosphate. This is a useful expedient. Arsenic is itself useful in the treatment of diabetes mellitus. Lithium salts and various alkaline mineral-waters are useful to keep the secretions active and neutralize acidity. Recently I have been using the salts of strontium, and especially strontium bromide, in the treatment of lithæmia and in the treatment of diabetes mellitus in the gouty and obese. In doses of about 30 grains, with 20 drops of glycerin, and infusion of gentian to make a tablespoonful, three times a day, before meals, I have found this drug of great service. It is a stomachic tonic, promotes digestion and relieves flatulence, increases general nutrition, and quiets the nervous system; at the same time it keeps the blood moderately alkaline. It can be given for much longer periods continuously than is safe with potassium salts, and is not contra-indicated in lithæmic cases, as

most sodium salts are. Strontium lactate is likewise used, but I prefer the bromide. In gouty and rheumatic cases especially, but likewise in hepatic cases, sodium salicylate is useful. It can be alternated with strontium bromide, and I am in the habit of giving it for a week or two whenever the patient complains of arthritic or muscular pains. I prefer to give it in capsule, followed by an ounce or two of water, the dose being from 5 to 15 grains three times a day. From time to time strychnine arsenate, $\frac{1}{125}$ grain six times a day, is given as a general nervous tonic-stimulant.

In the case of emaciated patients, or in obese patients temporarily when the sugar is excessive and does not yield to other measures, I prefer codeine to any other drug. The dose is from $\frac{3}{8}$ grain to 12 grains or more daily. It is to be given first in small doses, increased until the point of tolerance is reached or improvement is manifest, and then decreased to the smallest dose at which the gain made can be held. Following Sir B. W. Richardson, I give it in solution with hydrogen dioxide, in some such mixture as this:

> Codeine phosphate, gr. ii;
> Alcohol, f℥iv;
> Dilute phosphoric acid, f℥ii;
> Glycerin, f℥vi;
> Solution of hydrogen dioxide (10 volume), enough to make f℥iii.
> Dose.—2 teaspoonfuls in 3 ounces of water.

With this an alkaline course is usually conjoined, the patient being given some suitable mineral-water. Arsenic is sometimes added. Hydrogen dioxide, potassium permanganate, ozonic ether, and oxygen have been advocated on chemical grounds in the treatment of diabetes. I believe that any of them would be useful in helping to avert threatened coma, the special indication, as Harley has shown, being disappearance of sugar from the urine. The theory is simply that they bring about increased oxidation of the sugar or secondary products circulating in the blood. Hydrogen dioxide water can be given in much larger doses than I have mentioned,—almost *ad libitum*, in fact,—and oxygen can be conveniently given by inhalation. Ozonic ether can be injected hypodermically.

I have not spoken of diet, taking that for granted. It precedes medication. I will only say: Don't try to cut off bread and potatoes altogether; the patient won't submit. Gluten bread is not reliable and is not palatable. Give small quantities of ordinary bread,—toasted, if you like,—say six small slices or three rolls a day. An occasional roasted mealy potato will be a great treat and won't harm the patient. Beyond this, try to make up by fats for the exclusion of starches. It is now possible to give our patients a certain form of sugar. Last year I had before the class a young thin man, then in the hospital, to whom I was giving levulose, or fruit-sugar. Careful chemical analyses of his urine by Dr. Henry Leffmann showed that the urinary sugar did not increase, but actually diminished, while the patient was taking this form of sugar. As you know, levulose, so called because it rotates polarized light to the left, has the same empirical chemical formula as glucose, or, as the latter is called from its action on polarized light, dextrose. The rational formula of the two sugars, however, has been recently shown to be different, and the place of levulose is among the ketone group, while dextrose is placed among the aldehydes. This may account for their different relations to the metabolism of diabetics. Twenty years ago Kuelz, of Marburg, showed that diabetic patients could assimilate levulose and inosite, but only recently has the former been produced as a commercial article. I have used it now for nearly two years, and in some twelve cases of diabetes, and in all it has been assimilated. It is sweet,—not quite so sweet as cane-sugar, but sweet enough to enable our patients to gratify their palates,—and it is useful as a carbohydrate aliment. It turns coffee somewhat black. I give it in quantities of about an ounce a day to lean patients; to stout patients simply as a sweetening.

I am making some observations now with lactose,—milk-sugar. Several patients have taken as much as 4 ounces of milk-sugar in a day without increasing the excretion of sugar in their urine. Others can take but a fraction of this quantity. Philip is one of the patients on whom this observation has been made. He can dispose of about two ounces of lactose daily; four ounces cause an increase of about two ounces in his daily dextrose excretion. As a practical deduction from these clinical experiments, I permit my diabetic patients to drink milk freely.

And now, to conclude, I have three words of advice.

1. Keep your patients warm and protected; cold is their greatest enemy.

2. Examine the urine for organic acids and keep the blood alkaline.

3. In the matter of diet, be strict enough to diminish polyuria and glycosuria, and, if possible, to secure their disappearance, *provided* you

can at the same time keep the patient comfortable; but under any circumstances *make the patient comfortable.*

VENESECTION.

By Charles Granville Stone, M.D.,
Brightwood, D. C.,
Member of the Association and Medical Society of the District of Columbia.

MR. PRESIDENT AND FELLOW-MEMBERS:—The subject to which I wish to invite your attention to-night is the use of the lancet in the treatment of modern diseases, as viewed from the stand-point of a conservative practitioner of the science of medicine of to-day. I shall not undertake to interest you, as I might, by a long and varied history of bloodletting, since you may all find that in the books, but to call your thoughtful attention to the need of its use to-day as being greater, if anything, than at any time in the history of the race. We are now confronted by such an army of remedies looking towards the object of meeting and destroying the effects of high temperature in the course of disease, that we may well call a halt and ask ourselves, "Where will all this end?" In the death of our patients in many instances, or the permanent injury of some one of the many organs of their bodies, and in a shortening of the very life we have sought to prolong. I refer here to the many and indiscriminate uses of those medicines known now as antipyretics (formerly as antiphlogistics). Now, I shall make the assertion and defy contradiction, that within the last four years there have been more deaths due to the abuse of the antipyretics than ever occurred in any four years of the abuse of bloodletting. I make this bold assertion to call your minds to the contemplation of the truth as it is seen to-day in the practice of each and every one of you. Now, right here let me say that I believe in the use of many of the so-called antipyretics which are before the profession, but I also see one much safer which has fallen into "innocuous desuetude," without sense or reason, simply because it had been abused by the ignorant and those who, like many at the present day, follow the popular trend of professional thought and practice. I shall endeavor to make it plain to you why the great need of to-day is the return of the use of the lancet. I might safely rest this upon the advice of those great lights of our profession, among whom we have Sir Benjamin W. Richardson, Sir George Humphrey, Mr. Pollock, and a great many other eminent men of the present day, but I prefer, if I can, to convince you that there is a category of cases which has been the guide of the most honored men of the past and the most brilliant men of to-day, and which should demand of you the use of this most convenient, prompt, and potent antipyretic.

In the discussion of a paper read before the Royal Medical and Chirurgical Society of London, January 27, 1891, by P. H. Pye Smith, we have such men as Stephen Mackenzie, Sir George Humphrey, Dr. Broadbent, Mr. Hulke, Mr. Pollock, and Sir Benjamin Ward Richardson coming out in support of the lancet in the strongest terms. I shall here quote their words upon this subject as uttered upon the occasion. Pye Smith had selected in his paper fifty cases, including the following, under three categories: bronchitis, acute and chronic broncho-pneumonia, lobar pneumonia, miliary tuberculosis, valvular stenosis of the heart, pericarditis, Bright's disease, aneurism, apoplexy, and epilepsy. He took the ground that this remedy is to be used to meet certain indications, not one just adapted for any one such disease. First, cyanosis with distention of the right side of the heart, whether from pulmonary or other obstruction to the circulation; second, the intense pain of aortic aneurism; third, uræmic and prolonged epileptic convulsions. Dr. Stephen Mackenzie opened the discussion by saying, "I advocate its use. I have always been in the habit of bleeding in certain prescribed conditions, especially in the three categories of cases in which the author (Mr. Pye Smith) thought that bleeding was indicated. The first class—that of venous congestions—was the one which best exemplified its advantage. Where the patient was in pressing danger, with distention of the right side of the heart, its value was indisputable. Heart-disease might not be permanently benefited, but in capillary bronchitis it not only afforded all but immediate relief of the great distress, but was decidedly curative in its effects. In pneumonia it gave not so much relief to the disease proper as to the struggling right heart. The difficulty is a temporary one, and if this be tided over the prospect of recovery was materially enhanced, if not accomplished." Here Dr. Mackenzie gave the following interesting and instructive illustration of the efficacy of bloodletting in pneumonia. He had been called in consultation with Dr. Kibbler to see a case of acute pneumonia in a woman previously strong and healthy. Found her cyanotic, pulse 120, temperature 104° F., with respiration 52. She was stupid, drowsy, and apathetic. He said at once, "The only thing

to be done is to bleed." In this opinion her family physician, Dr. Kibbler, agreed. They drew twenty-six ounces of blood. The temperature at this time was 104° F. The next morning it had fallen to 98.2° F. In the evening the temperature ran up to 104° F. again, pulse 120, and respiration 55. Dr. Kibbler applied a few leeches, which failed to afford any relief. The following evening the patient's condition seemed so desperate (she being unconscious, pulse 130, temperature 105° F., and respiration 80) that Dr. Kibbler now drew twelve ounces of blood, with immediate relief to the most urgent symptoms and the temperature falling the next day not to rise again. Dr. Kibbler and his father, who had watched the case narrowly, were strongly of the opinion that the bleeding had been the means of saving her life. He also recalls a case, seen with his brother Lewis Mackenzie, of hæmoptysis. The blood had run down into the trachea and bronchi and the patient appeared in imminent danger. They bled, and he was immediately relieved and ultimately recovered. He says he believes that the iodide of potassium will, when given in large doses (30 grains), afford relief to the pain of aneurism, but it is not so sure nor so prompt as venesection, and he refers to a case, the specimen of which is now in the British Medical Museum, which had been cured by bleeding. Sir George Humphrey related at this meeting several cases wherein bleeding freely had saved the lives of patients beyond a doubt. He says he knew two brothers who had pleurisy. One was bled by him; the other was treated by another physician and was not bled. His case recovered promptly, while the other died. It was his opinion at the time that if the brother who was not bled had been bled, he would have recovered, too. Sir George's experience in bleeding in uræmia had been limited, but it had been attended with good results. He related a case where he had been called in consultation. The patient had bronchitis with albuminuria, and he advised bleeding, but the medical man stood aghast and said he did not bleed nor even know how. Sir George thereupon bled the patient himself. The doctor told him afterwards that he truly believed it saved the man's life. Dr. Broadbent said he had formed a strong prejudice against the practice of bleeding while a student in Paris, because the doctors there bled in cases of typhoid and rheumatic fevers; but that, after leaving the hospitals and becoming an independent practitioner, little by little the advantages of venesection became apparent to him, and for a long time not a year had passed without him having occasion to recommend it, and he often had to do it himself. He had seen patients' lives saved by bleeding in mitral stenosis and regurgitation, when, the balance having been restored, the patient had gone on for many years. He says, further, "The time to bleed in bronchitis is when you have a strong-beating heart and a feeble pulse, which indicates pulmonary obstruction. Dr. Hulke related a case of a man who had been brought into the hospital with injury of the head, and some time afterwards was taken with convulsions without any premonitions. He was called to his bedside, and found the patient with labored breathing, veins of the head and neck large and distended, and with a purple, congested face. He immediately bled him freely, with instant relief to all the symptoms. The man fell off into a refreshing sleep and was discharged the following day. Mr. Pollock insisted on the importance of bleeding in surgical cases, such as injuries of the head, fractured ribs, perforated lungs with more or less escape of air into the pleural cavity and great distress of breathing, and in hæmoptysis he knew nothing that conduced so much to the comfort and relief of the patient as bleeding. He said he was frequently and painfully mortified at the ignorance shown by the students who came up before him for examination for the army and foreign service; that they neither knew when nor how to bleed. Now, the only man in that great body of great men who could not and would not advocate the use of the lancet was Mr. Jonathan Hutchinson, who said that, as a surgeon, he could not use it, because he was afraid that some one might accuse him of having bled his patient to death. This very clearly shows that Mr. Hutchinson has not been practising that which he thought best, but what was safest for his own reputation. He was willing for them to die without the proper effort on his part to save, rather than run any risk of having his treatment questioned by the profession of popular gentlemen who condemned the same. That forcibly illustrates the condition that exists to-day in our profession in this country, and especially in this our capital city. Professor Samuel D. Gross, long before his death, advocated in his own city and in many others the return of the lancet, and acknowledged that he had, in his best opinion, lost some very eminent men through neglect of the use of that important little instrument. Who here to-night will pause even for a moment to question the truthfulness of this great surgeon's convictions? All of you are more or less indebted to him for what you know about the surgical

practice of medicine, and why should you doubt or question his correctness in this particular? Simply because it is not popular! But I tell you it will be popular long before many of you become too old to practise your art. I wish now to recall the opinion of one whom you all know of, and I doubt not many know personally, as being one of the foremost authorities in this country on the science and practice of medicine, and that reputation has been acquired largely because he is one of the best pathologists and because his opinions are founded upon pathological facts and not mere guesswork. I refer to Dr. William Osler, professor of medicine in the Johns Hopkins University, of Baltimore. He says, when a patient is brought into the hospital in a state of urgent dyspnœa in emphysema, with lividity and great engorgement of the veins, especially if the patient is young and vigorous, he should be bled at once. "I have," he says, "on more than one occasion saved the life of the patient by bleeding freely." In mitral and tricuspid stenosis with great engorgement of the venous system and resultant anasarca, he says bleeding will afford the most prompt relief. He also says that nothing will relieve the pain in aneurism sometimes so promptly as venesection. He likewise employs it in cerebral hemorrhage, effusion of serum, and venous congestion with great arterial tension. I might consume all my time here to-night with quotations from the most brilliant authorities of this country and Europe in support of my previous assertion that there never has been a time in the history of man when this most potent agent in the practice of medicine has been more needed than in this present day; and why? Simply because, as we become more civilized and highly educated, we are becoming more and more the subjects of diseases that are best met and treated by this remedy. We see by statistics that such diseases as congestion of the brain with effusion or hemorrhage have gradually increased, likewise pulmonic obstructions, also liver- and kidney-diseases, all of which are especially amenable to the antiphlogistic or bloodletting treatment of our forefathers. Our mode of life certainly is largely responsible for these conditions, more so than any change in the type of disease or climatic environments. Now, let us see just what we might reasonably expect from this bloodletting treatment, viewed in the light of present biological, physiological, and pathological science. The bacteriologist has certainly proved that our great phlebotomists—Sir Astley Cooper, John Hunter, and John Bell, of England, and the immortal Rush and Physick, of this country—were right when they claimed that there was a "humor in the blood" which could be bled out to a great extent, at least sufficiently to enable the patient to survive the immediate effects and give other means a chance to perfect a cure. While they did not know what these ferments were, they recognized the fact that by bleeding the patient you drew off a great portion of this poison, whatever it might be, and by the water which the patient required after venesection you diluted the poison which remained in the blood and thus destroyed its immediate virulency upon the human system. Now, we know that these so-called humors or ferments were nothing else than the various bacilli or their toxic ptomaines of to-day. Therefore, where would you find, of all the remedies in the Pharmacopœia, so potent a remedy in the congestive chill of malignant intermittent fever as bloodletting? There is none. You not only relieve at once the overloaded right heart, but you relieve the congested and almost paralyzed brain and spinal cord, which, if not relieved at once in this prompt and easy way, may cost you the life of your patient. Certainly, in these cases you would not think of waiting for the slow action of a purgative or any of the mild revulsives that might be at hand. As I said before, where will you find another means so prompt to relieve your patients of immediate danger? Another condition. Suppose you are called suddenly to see a large plethoric individual who has just fallen to the floor with apoplexy. You see him, like the late Congressman who died here the other day, with gasping breath, eyes turned back in his head, face cyanotic, and with a perfect and total paralysis of the entire body. Now, in this case, what, in the name of a great and good God, can you do with drugs? You can give but one answer to this question truthfully, and that is, Nothing. What might you do with the lancet or your penknife, if you had nothing else better adapted? Bleed him, relieve the overtaxed heart and the engorgement at the base of the brain, and restore him to consciousness, if not to health again, as I have in several instances. I shall relate one instance that just now occurs to me. Several years ago one of our prominent citizens was in the collector's office of the district waiting for the clerk to give him his tax bill, which he wished to pay. He had been quite excited and worried about the amount of the assessment, and had not been feeling well that morning. He had said before going to town that he had a "swimming" in the head. Just as the clerk handed

him the bill he commenced to stagger and speak incoherently, and would have fallen to the floor had he not been caught just in time by some one standing near. They immediately called in a couple of physicians and had him conveyed to the house of one of them, and they applied the popular treatment, of course. This failing to restore him to consciousness, the wife, who had been hastily sent for, telephoned me, and asked me to come down and meet them, that she was bringing him out home in a carriage. I met them half a mile from the city, and turning my horse and buggy over to his son, who had also now joined them, I got in the carriage with my patient. They had him propped up in the carriage with pillows, and he presented the appearance of a dead man, only that his face and forehead were lined with great blue veins that stood out like whip-cords. His breathing was slow and stertorous, while his heart was beating like a sledge-hammer. I hurried the driver, and in less than twenty minutes we arrived at his house. I had him taken to his room, and, after having removed his clothes, tied his left arm and drew about thirty-two ounces of blood. It ran very slowly, and was black and thick at first, but before I had finished it became bright red and natural looking. He became perfectly conscious, and commenced to relate the particulars of the attack and when it had happened, before I had tied up his arm. Now, in this case, I feel assured that bleeding was not only the thing, but the best and only thing to be done. He entirely recovered from this attack, and was free of the slightest signs of paralysis and remained so for a long time after, but had another attack from having violated my injunction that he should give up the habit he had of going over and around his yard and picking up stones or anything that might have been neglectfully thrown there. In the second attack he was not only in strong convulsions when I reached him, but he showed perfect hemiplegia. I again bled and restored him to consciousness, but he could not articulate plainly, nor did he ever entirely regain the use of his limbs on the right side, although he could walk with the assistance of his valet. This condition of things lasted for nearly one year, when he was taken with a third attack, when I declined to bleed him (though the family wished me to) because his condition was not likely to improve over what it had been for the last year. The chances were that the bleeding could not relieve the case, so, taking the advice given by Dr. Hutchinson, I saved myself from being accused of having bled him to death.

I cannot refrain from referring to a case of acute lobar pneumonia which came under my care some twenty years ago, or the second year of my practice in this District. It was late at night and just after a dreadful storm in April; when quite near the house I was confronted with a greatly swollen stream; but as I was contemplating returning and taking the chances that the patient would get along all right until morning, I looked up to the house, which was located some twenty-five yards up the hill on the other side of the stream, and could very distinctly see the father and mother struggling with the young man to keep him from getting out of the window. This settled the matter of fording the stream. I arrived just in time to help them carry him back from the stairway, where he had tried to descend in his effort to escape in his wild delirium. I had great difficulty in keeping him quiet enough to make a physical examination. I found a double pneumonia, both lungs almost entirely solidified. This condition was accompanied by a strong-beating beart, feeble pulse, and a cyanotic face; respiration some 60. I did not attempt to take his temperature, but hastily tied up his left arm and took some thirty ounces of blood. This was immediately followed by perfect quietness of the patient and relief to all of the most urgent symptoms. I then ordered for him some powders containing 8 grains of Dover's and 2 grains of calomel, to be given every three or four hours, as needed to quiet him, knowing that the bowels would move freely from the effects of the calomel, and that he would not likely need another bleeding in the morning. I also had a blister, five by six inches, applied over each lung and then covered by a meal poultice, to be changed every hour until the blisters drew. I remained a couple of hours and then left him sleeping as sweetly as a new-born babe, and returned the next morning to find him perfectly rational, breathing freely, respiration only about 20, cough not troublesome, but raising the prune-juice expectoration with great ease and in great quantities. The temperature was now 102.5° F., and his skin, which had been hot and dry the night before, was moist and felt all but natural. This case made an uneventful recovery, being out at work in less than three weeks. I am perfectly satisfied that if I had not bled him he would have died before I could have got anything else to act. If any one in this Society should doubt the truth of this statement, I will be glad to take him out and introduce him to the family and have the family vouch for all that I have said.

Now, let us look at the subject of bleeding "spring and fall," or, in other words, bleeding as a prophylactic. As I said in the beginning of this paper, there are certain indications as regards youth, strength, and the plethoric condition of the individual which, in the present advanced state of our knowledge of etiology and pathology, must perforce recommend this treatment to us in a number of cases as the best we have at hand. Now, we will take for example one of our active businessmen, who weighs, say from one hundred and eighty to two hundred and twenty pounds, full-blooded, plethoric, with florid complexion, of a bilious habit and lymphatic temperament. He frequently complains of headache and swimming in the head. He is a good liver and takes his grog. This patient, if you will take thirty-two ounces of blood from his arm "spring and fall," will be relieved of those symptoms, and if he be of apoplectic parents you will prolong his life. If he is, as many of these men are, the subject of catarrh of the bowels, he will get well of that ninety-nine times out of a hundred. Now, why would bleeding cure the headache, swimming in the head, and prevent apoplexy? Because the blood is in excess of that required in the economy, and because bleeding will lessen the arterial and venous tension. Now, how will it do this? Simply by a common law of physics. We know that, if we take a thin rubber tube and force fluid through it, the tension is increased in proportion to the density of said fluid,—that molasses would rupture the tube under the same force that would drive water with equal rapidity free of all danger. If the blood of a healthy individual is forced through the arteries under fifty-two pounds' pressure and at a velocity of twenty inches per second without injury to the vessels, molasses in its stead would rupture every artery of the body under the same force and rapidity of stroke. Therefore, when we bleed we thin the blood, because the system will replace in a very short time the loss in quantity by the absorption of water either from that supplied to the patient from without or it will take it up from the serous sacs or cavities from within. I admit that bleeding thins the blood of its solid elements, and, while doing this, removes a large per cent. of that which acts upon the system as the cause of disease. If you inject a large dose of some poison into the blood and immediately bleed freely, and give the patient at the same time large quantities of water to drink, you will so dilute the poison after what you have abstracted through bleeding, that the dose, which would otherwise have killed, will pass harmlessly out of the system and your patient will not be any the worse for it. We know that modern science has clearly demonstrated the fact that if we reduce the pressure in the capillaries, we will relieve the heart force or the necessity of it, reducing its work and therefore lessening the danger of heart-failure. This seems so clearly demonstrated in the practice of bloodletting in the prescribed indications in disease, that whether or not we can prove the theory true matters little. I have to-day a lady who lives in the District, and whom I have bled "spring and fall" for the last eight or ten years, and I am certain she would have died long since if it had not been done. There has been a case in my practice within the last twenty years whose blood-making organs were so active that it became a disease or abnormal condition, and who, notwithstanding the most rigid course of diet and exercise, had to be bled twice a year to save his life, on account of the great danger from pulmonic congestion. The father of Mr. Gude, your energetic florist on F Street, was one of these patients to the day of his death, which was caused, as his son will tell you, because he neglected to come when he knew from his feelings that he ought to be bled. This man had been given up to die by two of the most honored men whose names ever adorned the roster of this Society, and yet, as I said before, under the spring and fall bleeding he lived for some eight or nine years. I thank you, gentlemen, for the patient attention which you have accorded me this evening, and sincerely hope that I have convinced some of you of the great therapeutic value of this handy remedy.

THE PHYSIOLOGICAL ACTIONS OF ALCOHOL.

ABSTRACT OF A PAPER PRESENTED TO THE SECTION ON THERAPEUTICS OF THE FIRST PAN-AMERICAN MEDICAL CONGRESS, HELD AT WASHINGTON, D. C., SEPTEMBER 5, 6, 7, AND 8, 1893.

BY DAVID CERNA, M.D., PH.D.,

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(Continued from page 232.)

ON THE BLOOD-PRESSURE.—Following an injection of a small quantity of alcohol in the normal animal, as is observed in the preceding experiments, there occurs within a short time a sufficiently marked rise of the column of mercury in the manometer. After a while the pressure returns to its normal

height, and again rises if a second dose is given, to be once more decreased below the normal if the amount of the drug ingested is carried beyond a certain limit. Thus, in Experiment 10, after the administration of 10 cubic centimetres of a twenty-five-per-cent. solution, a rise of 18 millimetres occurred one minute and forty-five seconds afterwards, and in two and a half minutes more the pressure fell to 158 millimetres (the normal being 154). A second injection of 15 cubic centimetres was followed by an increase of 16 millimetres above the normal point within half a minute. The pressure stayed up for about two minutes. A third injection of 20 cubic centimetres caused a very slight rise, this lasting for about eight minutes, and then there was a gradual fall below the normal. The same results are noticed in Experiments 11 and 12.

In Experiment 13 a continuous injection was employed of a solution of the strength of twenty per cent. Three minutes after the injection had been started the pressure rose to 138 millimetres (the normal being 132 millimetres), and to 142 millimetres three minutes later. By the time that the animal had received 50 cubic centimetres of the alcoholic solution (eight minutes after the beginning of the injection), the pressure marked 138 millimetres, still above the normal; but it soon afterwards began to diminish, and was seen at 128 millimetres by the time that 155 cubic centimetres of the solution had been ingested into the animal. The pressure, with slight variations and accompanied by disturbances of reflexes and respiration, then fell gradually till the occurrence of death, this latter issue taking place through failure of the respiration.

Similar results were obtained in Experiment 14. In this animal the normal pressure was 138 millimetres. There was a slight rise a few minutes after the commencement of the injection. By the time the dog had received about 260 cubic centimetres the column of mercury marked 118 millimetres. The crural nerve, which had been previously prepared, was then stimulated with an electrical current of medium strength, and a few seconds afterwards the pressure rose to 122 millimetres, showing evidently that the vaso-motor system was intact. When 325 cubic centimetres of the alcoholic solution had been ingested the pressure marked only 98 millimetres. At this time the sciatic nerve, which had also been previously prepared, was irritated with a strong faradic current, and the column of mercury in the manometer was seen to rise to 106 millimetres. Ultimately the animal died from respiratory failure, having lived forty-six minutes under the influence of alcohol.

Experiment 15 shows the same effects on arterial pressure. After 6 cubic centimetres of pure alcohol had been administered, the column of mercury was reduced to 120 millimetres (from 150 millimetres, to which it had been elevated,—that is, 12 millimetres above the normal). At this time artificial asphyxia was produced by tying the trachea tightly. Here, again, under such circumstances, there was a decided response by the vaso-motor system, as shown in the rise of pressure to 142 millimetres.

I found, likewise, that in curarized animals—in which any influence exercised by the respiration on blood-pressure is thus avoided—alcohol, in small amounts, produced the same results, as may be observed in Experiment 17.

Large doses of the drug cause from the onset a decided lowering of the arterial pressure, this decreasing, if the amount has been sufficiently poisonous, till the occurrence of death. If the dose be moderately large, its ingestion into the torrent of the circulation will be followed by a decided fall, the result, no doubt, of an overwhelming action upon the heart. In these instances the pressure is apt to recover, but does not go beyond the normal height.

Let me explain how these changes of blood-pressure are brought about. It has been shown by the most recent physiological researches that when, in an animal under the influence of a drug, the two curves (as registered on the revolving kymograph), one representing the rate of the pulse and the other the height of the blood-pressure, run parallel, such an effect is the result of an action upon the heart; but if opposite to each other, the phenomenon is dependent upon a vaso-motor influence. In other words, if the arterioles are made to contract through a vaso-motor stimulation or spasm, the blood-pressure rises; but, at the same time, the increased pressure stimulates the cardio-inhibitory centres in the medulla oblongata. As a consequence of this latter phenomenon the rate of the pulse falls, and thus the curves of the pressure and the pulse run in opposite directions. When this takes place it is assumed that the change in the arterial pressure is due to a vaso-motor influence exercised on the arterioles.

Now, then, a plot taken from a kymographian record of an animal under the influence of alcohol in moderate amounts would undoubtedly show a parallel course of the curves, this alone giving evidence of a cardiac action. There is, however, further and perhaps more conclusive

evidence of this action of the drug under consideration.

Faradization of a sensitive nerve and asphyxia are able to elevate the arterial pressure depressed by toxic quantities of alcohol, this result proving that the vaso-motor system is intact. But the stimulation by small doses of alcohol might as well be ascribed to an influence exercised on the vaso-motor system or to paralysis of the cardio-inhibitory apparatus as to a direct cardiac action. Yet that such is not the case is shown by the results obtained in the third and fourth series of the experiments performed on dogs. In these experiments the cardio-inhibitory and the vaso-motor influences were eliminated by previous section of both pneumogastric nerves in the first place, and by previous division of both vagi and the spinal cord in the second instance.*

The results obtained in Experiments 18 and 19 and in 20 and 21 are obvious. An examination of the corresponding tables shows that alcohol, under such circumstances, is still able, when given in small quantities, to stimulate both the arterial pressure and the pulse-rate. Large doses of the drug in all cases produce from the onset depression effects.

It must be concluded, then, from the foregoing experimental evidence, that alcohol in small amounts causes a rise of the arterial pressure by a direct action upon the heart, and that in large or toxic quantities it lowers the blood-pressure similarly through a cardiac influence.

On the Blood.—If alcohol is mixed with blood outside of the body, coagulation is enhanced. I have often observed this in my experiments, in those made solely to study this phenomenon as well as in those already sufficiently described. I found that coagulation could be largely avoided by diluting the agent before its ingestion into the torrent of the circulation. To what these effects were due was not determined. Microscopical examination of the blood of animals killed with alcohol showed a marked alteration of the corpuscles, many of these appearing shrivelled and exhibiting yellowish matter in their interior. This latter observation has been previously made by Jaillet and Hayem,† and long before by Schulz.‡ Schmiedeberg § has noticed that alcohol mixed with blood diminishes the ability of this fluid to yield oxygen in the presence of a reducing agent. There is no doubt that alcohol in this action causes the separation of the hæmoglobin from the corpuscles.

On the Respiration.

Small doses of alcohol do not markedly affect the rate of the respiratory movements. In large or toxic amounts the drug generally decreases the respiratory rate, although this is sometimes primarily or secondarily increased, accompanied by a diminution of the depth of the movements. As a rule, the amount of air going through the lungs—whether the rate is increased (in which case the respirations are usually shallow), or whether the depth of the movements is diminished—is decreased. The results of the experiments recorded herewith in regard to the respiratory rate are sufficiently clear. As the same effects are noticed in animals in which the vagi have been previously divided, it is evident that the drug diminishes the respiratory movements by a direct action on the centres in the medulla.

I have found that alcohol not only produces, in sufficient amounts, a decreased rate, but also a diminution in the depth of the respiratory movements, this giving rise to a lower quantity of air passing through the lungs than in normal conditions.

I have in this respect conducted a special series of experiments, the results of which are recorded below.

A simple apparatus was constructed,‖ consisting of two bottles filled with mercury, in which this substance served the purpose of a valve against tubes inserted through a tight rubber stopper. Both bottles, by means of rubber tubing and a Y-shaped glass tube, were connected with the trachea of the animal; and, in turn, one of the bottles was left in contact with the atmosphere, the other with large rubber bags, these again being made to communicate with a common air-meter. Thus the air inspired by the animal was wholly transferred to the rubber bags, and the amount of air passing through the lungs in a certain period of time more or less accurately ascertained by the meter. I first measured the air for two or three periods of five minutes' duration each before injecting the drug, and then proceeded to repeat the operation while the animal was under the influence of alcohol.

The same results were obtained in animals in which the vagi had been previously severed. In

* Post-mortem examination of these latter animals showed that the cord had been completely severed.

† Virchow and Hirsch, *Jahrbucher*, 1884.

‡ *Hufeland's Journ.*, April, 1841.

§ *Virchow's Archiv*, Bd. ii. S. 171.

‖ The apparatus was suggested to me by Professor H. C. Wood, while working with him in the laboratories of the University of Pennsylvania.

this connection I have made the observation that, after division of the pneumogastrics, although the respiratory movements, as is well known, are diminished in rate, there is quite often an increase in their depth, and, as a consequence, a larger amount of air than in normal conditions is taken in by the animal. On the other hand, I have frequently noticed that, after section of the vagi, instead of a decrease, there often occurs an enormous increase in respiratory rate; but, at the same time, the shallow character of the movements admits of a proportionate diminished amount of air entering the lungs.

Alcohol, after previous division of the vagi, is still able to produce a diminution in the depth of the respirations, this diminished depth causing a lessening of the quantity of air inspired. The following records show this:

Experiment 22.—Dog; weight, 7.71 kilos.

Period.	Respiration per min.	Meter air-movement.	Remarks.
First.....	48	7.9	Dog quiet.
Second.....	46	7.6	Dog quiet.
Third.....	46	7.6	Dog quiet; injected 2 c.c. of pure alcohol.
Fourth.....	36	5.4	
Fifth.....	30	4.9	Dog quiet; injected 1 c.c. of pure alcohol.
Sixth.....	24	4.1	Eye reflexes very weak.
Seventh.....	24	4.1	Respirations shallow.
Eighth.....	24	4.1	Injected 2 c.c. of pure alcohol.
Ninth.....	22	3.8	Eye reflexes gone; animal alcoholized.
Tenth.....	18	3.1	Eventually killed with ether.

Experiment 23.—Dog; weight, 12.6 kilos.

Period.	Respiration per min.	Meter air-movement.	Remarks.
First.....	72	19.6	
Second.....	72	19.4	
Third.....	78	20.0	Animal struggles; injected 2 c.c. of pure alcohol.
Fourth.....	60	15.1	
Fifth.....	54	13.0	Injected 3 c.c. of pure alcohol.
Sixth.....	36	9.4	Eye reflexes gone; injected 5 c.c. of pure alcohol.
Seventh.....	30	7.3	Respirations irregular and shallow.
Eighth.....	12	5.7	Muscular rigidity.
Ninth.....	8	4.6	
Tenth.....	6	3.8	Respirations very shallow; killed with ether.

Experiment 27.—Dog; weight, 10.8 kilos.

Period.	Respiration per min.	Meter air-movement.	Remarks.
First.....	26	9.3	Alcohol (25 per cent.) used.
Second.....	24	9.5	
Third.....	24	10.0	Cut both vagi; tube in trachea.
Fourth.....	12	11.2	Period taken 10 minutes after cutting of vagi.
Fifth.....	16	12.1	
Sixth.....	12	15.8	Respirations deep.
Seventh.....	12	16.1	Started injection.
Eighth.....	10	12.0	
Ninth.....	8	10.2	Eye reflexes weak; has received 125 c.c.
Tenth.....	8	7.0	
Eleventh...	6	5.1	Has had 200 c.c.
Twelfth.....	6	3.7	Has had 240 c.c.; stopped alcohol.
Thirteenth..	6	2.1	Respirations quite shallow.
Fourteenth	...	...	Animal died.

As in the case of the respiratory rate, alcohol, therefore, causes a depressant effect on the depth of the respiration and the amount of air passing through the lungs, such a result being due also to a direct action of the drug on the respiratory centres in the medulla oblongata.

In concluding this portion of the subject, in which, by the methods sufficiently described, I have been able to study at the same time the behavior of alcohol on the circulation and the respiration, I may state that I did not attempt to ascertain the minimum fatal dose of the drug in dogs. In fact, the action of alcohol upon the lower animals, even of the same species, varies as regards its toxicity, and any general conclusions drawn from one series of experiments may be diametrically opposed to those arrived at in a second series. However, taking into consideration the most striking of my experiments, I obtained the following records: In Experiment 12, 17 cubic centimetres of pure alcohol proved fatal to a dog weighing 9.9 kilos, or 1.7 cubic centimetres per kilo of the body-weight may be said to have been the lethal dose. In Experiment 13, a dog weighing 8.3 kilos died after an injection of 320 cubic centimetres of a twenty-per-cent. solution of alcohol, giving as an average for the fatal amount 38.5 cubic centimetres of the solution per kilo of the body-weight. In Experiment 14, in which a twenty-five-per-cent. solution of alcohol was employed, 325 cubic centimetres of this was sufficient to destroy a dog weighing 8.9 kilos, the average being quite similar to that noticed in the

second example here referred to,—that is, 36.5 cubic centimetres per kilo of the body-weight. Eagleton observed that alcohol in the strength of twenty-five per cent. produced death in the proportion of from 5 to 40 cubic centimetres per kilo of the animal's weight, results apparently somewhat similar to mine.

On Bodily Metabolism.

On the Elimination of Carbon Dioxide and the Absorption of Oxygen.—The absorption of oxygen and the elimination of carbon dioxide have been the subject of very elaborate researches, and although there appears to be some difference of opinion in the two questions at issue, most investigators seem to have arrived at almost definite conclusions. Let me, however, bring to the notice of the reader the most important points in the controversy, which will serve as the basis for this study and for further research. The subject certainly needs to be further investigated.

In regard to the elimination of carbon dioxide, Boecker,* Perrin,† Davis,‡ Hammond,§ Boeck and Bauer,‖ and Rumpf¶ affirm that, under the influence of alcohol, there is a distinct decrease in the amount of carbon dioxide exhaled; and whiskey, brandy, and gin diminished the production of the gas, according to the researches of Smith,** quoted by Wood; †† diminished the production of the gas, it is true, but alcohol in small quantities increased the elimination of the carbon dioxide. This same increase has been observed by Wolfers ‡‡ in the case of rabbits.

Closely allied to this question of elimination of carbonic acid is that of the absorption of oxygen, similarly of the greatest interest. This has also been the subject of several investigations. Thus, Henrique,§§ from experiments performed upon himself, found that there was an increase in the amount of oxygen consumed. Identical results were obtained by Wolfers ‖‖ in the rabbit, and in rabbits and dogs by Bodländer.¶¶ Zuntz,*** who experimented upon man, came to opposite conclusions, asserting that the consumption of the gas is decreased. Forster ††† made similar observations. "No important effect," on the other hand, was noted by Geppert ‡‡‡ in a similar series of experiments. The matter has been discussed at length by Warren,§§§ and Wood,‖‖‖‖ commenting upon the contradictory nature of the evidence presented up to 1891, states that to his mind such evidence "is probably in part due to the experimental difficulties of the subject, but at the same time strongly indicates that moderate doses of alcoholic spirits have no constant very decided action upon the formation and elimination of carbonic acid. It is readily conceivable that by checking or aiding digestion, by influencing circulation, or in some other way, they may exert a varying indirect action, which is superior to the slight direct influence in lessening carbonic acid production, which the weight of evidence indicates that they possess."

On Nitrogenous Excretion.—Upon the elimination of nitrogenous material alcohol has, although denied by some observers, a very decided action. Boecker ¶¶¶ has apparently proved experimentally that the drug decreases the elimination of urea. This is denied by Parkes and Wollowicz;**** and yet it is seen in the experiments of these latter investigators that, with the exception of one day in which the man experimented upon had a chill followed by a feverish reaction, the daily excretion of urea was 34.35 grammes during the alcohol period; during the time when brandy was taken the elimination of urea was 34.8 grammes, while during the water period it was 35.02 grammes. There was, therefore, a reduction in the excretion of urea by about 10 grains (.65 gramme) daily. Hammond, quoted by Wood,†††† experimented upon himself, dividing his experiments into three series: First, when just sufficient food was taken to maintain the weight of the body; secondly, when more food than enough was taken for that purpose; and, thirdly, when not enough food was ingested. The results noticed were in all instances similar,—that is, they showed that alcohol lessened the amount of chlorides, phosphates, and urea. These results have been confirmed by the careful experiments of Rieso,‡‡‡‡ made on two persons placed under the strictest conditions. This

* Quoted by Bernard in *Journ. de Pharm.*, t. xv., 3d series, 1849.

† *Archiv. Général*, t. lv., 6th series.

‡ *Transactions of the American Medical Association*, 1855.

§ "Physiological Memoirs." Philadelphia, 1863.

‖ *Zeitschr. f. Biolog.*, Bd. x., 1874.

¶ *Pflüger's Archiv*, Bd. xxxiii., 1884.

** *British Medical Journal*, 1859.

†† *Loc. cit.*

‡‡ *Pfluger's Archiv*, Bd. xxxii., 1883.

§§ *Bull. de l'Académ. Roy. de Belge*, t. ii., 1883.

‖‖ *Loc. cit.*

¶¶ *Zeit. f. Klin. Med.*, Bd. xl., 1886.

*** *Fortschr. der Med.*, Bd. l., 1887.

††† *Annual of the Univers. Med. Sciences*, 1888.

‡‡‡ *Archiv f. Exp. Pathol. und Pharm.*, Bd. xxii.

§§§ *Boston Med. and Surg. Journ.*, July, 1887.

‖‖‖‖ *Loc. cit.*

¶¶¶ *Loc. cit.*

**** *Loc. cit.*

†††† *Loc. cit.*

‡‡‡‡ *Hoffman und Schwelbe's Jahresb.*, No. 357, 1881.

author found that, under the influence of alcohol, there was a marked decrease in the urea elimination, and to a less degree also in the excretion of chlorides, phosphates, sulphates, and uric acid. There was at the same time a gain of the bodily weight.

This action of alcohol on metabolic changes is further corroborated by the excellent researches of Mohilansky,* house physician to the clinic of Manassein. The investigator undertook a series of experiments on fifteen healthy individuals, most of them medical students aged from eighteen to twenty-eight years, his object being to study the action of alcohol not only on the nitrogenous metabolism, but also on the assimilation of proteids and fats. Some of the subjects experimented upon were total abstainers, some were occasional drinkers, while others were habitual alcohol drinkers. The ingestion of the drug varied according to the habit of the individual, and the daily dose administered varied from 60 to 140 cubic centimetres (2 to 5 ounces) of absolute alcohol, or from four small wineglassfuls (rumka) to half a bottle of a forty-per-cent. or forty-two-per-cent. vodka (aquavit). In other words, a sufficient amount was given to produce a slight intoxication, as high spirits and talkativeness, etc. The results of Mohilansky's study are so important that I will transcribe the principal ones. He found: 1. In people habituated to alcohol, when taken in moderate quantities, it distinctly improves the appetite and gives rise to a marked increase in the assimilation of the nitrogenous constituents of food, the average surplus amounting to 2.09 per cent., the maximal to 4.22. (Thus, a patient who had been assimilating 93.10 per cent. of nitrogen, without alcohol, when this drug was added to his dietary, proved to be assimilating 96.07 per cent. of nitrogen.) 2. In habitual total abstainers, however, the assimilation is somewhat diminished, from .28 to .33 per cent. 3. The increased assimilation in the former category must be attributed to a more complete absorption and intensified gastric digestion, which result from a prolonged retention of food in the stomach on the one hand and from increased digestive power and secretion of the gastric juice (Bernard, Kretschy, Richet, Lever, Petit and Semerie, and Gluzinski) on the other. 4. The nitrogenous metabolism or disintegration of proteids almost invariably decreases (this happened in thirteen out of the fifteen cases), the average fall being 8.73 per cent., the maximal 19.42 and the minimal .14. (For example, in a patient in whom the metamorphosis on non-alcoholic days had amounted to 80.11 per cent., on alcoholic days it fell to 63.78.) The decrease is frequently observed even when small doses are taken, but it is invariable in the case of moderate or medium quantities. There does not, however, exist any strict parallelism between the dose and the amount of the inhibition of the metabolism. 5. The decrease remains still perceptible for some time, even after the alcohol has been discontinued. 6. It is probably dependent upon the drug inhibiting the systematic oxidation processes (Manassein, Schmiedeberg, and Boecker), and, further, upon its changing the blood-pressure, dilating the blood-vessels, retarding the circulation, and depressing the bodily temperature. 7. Alcohol also diminishes somewhat the assimilation of fats, as it was found that there was an increase in the quantity of fatty acids excreted with the fæces.

Although not strictly within the limits of the present essay, the work of Diakonoff† in this respect is worthy of mention. This author undertook a series of experiments on febrile patients, with the purpose of ascertaining the effects of alcohol on the assimilation and metabolism of proteids. Of the seven patients experimented upon, six were suffering from typhoid fever and one from exudative pleurisy. Of these patients, two were total abstainers and five occasional alcohol drinkers. The drug was administered internally, in the form of a forty-per-cent. vodka (aquavit), four times a day, the daily dose being invariably 50 cubic centimetres ($1\frac{3}{5}$ ounces) of absolute alcohol. The diet of the patients was limited to milk and bread, and the treatment was purely expectant. The author obtained the following results: 1. In febrile patients alcohol lowered the assimilation of the nitrogeneous ingredients of food. 2. In regard to this effect of alcohol no difference was noticed between habituated and non-habituated individuals. 3. Alcohol spoils appetite and increases both the total daily amount of fæces and the proportion of water and coagulated albumin therein. 4. The drug decreases the quantity of albumin undergoing decomposition in the system. 5. In such cases, where the assimilation of nitrogen sinks but slightly, alcohol lowers the nitrogenous metabolism; where the depression, however, of the assimilation is considerable, the metamorphosis proves to be augmented. 6. Alcohol disturbs the metabolism also inqualitatively, since it raises the proportion of under-oxidized products.

* *Medical Chronicle*, November, 1889.

† *Medical Chronicle*, January, 1890.

I have not had a sufficient opportunity to make a study of this part of the subject, but it seems to me, from the experimental evidence brought forward, that this points to a well-sustained conclusion in regard to the actions of alcohol on metabolism,—that is, that the drug produces a decided lessening in the excretion of the products of tissue-waste, both in health and disease.

On Animal Heat Functions.

On Normal Temperature.—Alcohol affects the animal heat functions in both man and the lower animals proportionately in a similar manner. Under the action of moderate doses there is frequently produced a slight elevation of the temperature corresponding with a stimulating effect upon the circulation. In other words, the rise of the temperature occurs *pari passu* with an increase of the blood-pressure above the normal point. The following record is sufficiently clear:

Experiment 28.—Dog; weight, 15.2 kilos.

Time. min. sec.	Pressure. mm.	Rectal temperature. C. scale.	Remarks.
			Pure alcohol used.
0.00	138	40.0	
2.30	138	40.0	Injected 1 c.c. of drug.
3.00	140	40.0	Injection ended.
5.00	144	40.1	
9.00	148	40.2	
14.00	150	40.4	
19.00	150	40.6	Animal restless.
24.00	158	40.8	Dog quiet again.
39.00	150	40.6	
49.00	142	40.4	
59.00	142	40.0	Killed with ether.

This rise of temperature is comparatively of short duration and apparently unimportant, since subsequently it is followed by a depression below normal, especially when larger and toxic amounts of alcohol are ingested. The results of the preceding experiments on temperature are confirmatory of those observed by Richardson* and by Parkes and Wollowicz.† The latter authors found a trifling exaltation of temperature after doses sufficiently large to increase the activity of the circulation. Richardson noticed that in minute quantities alcohol increased the temperature in mammals .5° F. and in birds 1° F. above the normal.

It has been sufficiently proved that alcohol in large and lethal amounts produces in animals a fall of the bodily temperature. Even as far back as 1848, Dumeril and Demarquay, quoted by Wood, affirmed that alcohol in large doses causes a marked decrease of the temperature. The truth of this statement has been more recently upheld by the results obtained in the laboratory and in the clinical ward by a host of able observers. I will not burden the reader with an account of each one of these observations, but I believe it will be sufficient for me to refer to the authorities consulted by simply mentioning them. Almost all experimenters are in accord in regard to the action of alcohol on normal temperature, and the names of Anstie,‡ Binz,§ Bouvier,‖ Brown-Séquard,¶ Davis,** Godfrin,†† Jacobi,‡‡ Lewin,§§ Lombard,‖‖ Mainzer,¶¶ Manassein,*** Obernier,††† Rabou,‡‡‡ Raziejewski,§§§ Ringer and Rickards,‖‖‖ Ruge,¶¶¶ Sulzynski,**** and Tscheschichin †††† may be recalled.

In the experiment that follows,—an example of others performed,—in which toxic amounts were employed, the depression of the temperature, with slight variations, was quite marked. I may here state that, if the dose ingested is fatal, the fall observed is progressive till the occurrence of death.

Experiment 30.—Dog; weight, 9.97 kilos.

Time. min. sec.	Pressure. mm.	Rectal temperature. C. scale.	Remarks.
			Pure alcohol used.
0.00	166	39.3	
3.30	166	39.3	Injected 5 c.c. of drug.
4.00	166	39.3	Injection ended.
5.30	162	39.3	
8.30	152	39.2	Injected 10 c.c. of drug.
9.00	150	39.2	Injection ended.
15.00	142	39.0	Injected 10 c.c. of drug.
15.30	140	39.0	Injection ended.

* *Medical Times and Gazette*, vol. ii. p. 704, 1869.

† *Transactions of the Royal Society*, 1870.

‡ "Stimulants and Narcotics." London.

§ *Virchow's Archiv*, Bd. ii. S. 153; also *Practitioner*, vol. iii., 1869, and vol. iv., 1870; and *Journ. of Anatomy and Physiology*, vol. viii. p. 232, 1874.

‖ *Pflüger's Archiv*, S. 370, 1869; "Wirkung der Alcohol auf die Korpertemperatur," Bonn, 1869; and *Centralbl. f. Med. Wissens*, December, 1871.

¶ *Journal de la Physiologie*, p. 467, 1859.

** *Transac. Amer. Med. Associat.*, p. 577, 1855.

†† "De l'Alcool, son Action physiologique, ses Applications thérapeutiques." Paris, 1869.

‡‡ *Deutsche Klinik*, 1857.

§§ *Centralbl. f. d. Med. Wissens.*, No. 38, 1874.

‖‖ *New York Medical Journal*, June, 1865.

¶¶ *Virchow's Archiv*, September, 1871.

*** *Centralbl. f. d. Med. Wissens.*, 1869.

††† *Pflüger's Archiv*, S. 499, 1869.

‡‡‡ *Berlin. Klin. Wochenschr.*, 1871.

§§§ *Centralbl. f. d. Med. Wissens.*, 1871.

‖‖‖ *London Lancet*, p. 208, 1866.

¶¶¶ *Virchow's Archiv*, Bd. xlix., S. 265.

**** "Inaugural Dissertation." Dorpat, 1865.

†††† *Reichert's Archiv*, 1866.

Time. min. sec.	Pressure. mm.	Rectal temperature. C. scale.	Remarks.
16.00	135	39.0	Animal struggles.
21.00	132	38.8	Injected 10 c.c. of drug.
21.30	130	38.8	Injection ended.
26.30	120	38.6	Dog quiet; eye reflexes weak.
31.30	112	38.4	Clot for 5 minutes.
37.00	108	38.3	
42.00	98	38.2	Eventually killed with ether.

It is thus demonstrated beyond doubt that alcohol in sufficiently large quantities diminishes the bodily temperature in the lower animals the same as it does in man.

This action, however, is not the same in the case of abstainers and of habitual drinkers. In the first class of individuals the depressing influence is usually produced, but in those persons addicted to the habitual use of alcoholic stimulants the effect is either slight or totally wanting. This is an almost every-day observation. In this respect I may call attention to the elaborate research of Riegel,* who performed eighty-six experiments on man, with the object of studying the behavior of the drug on bodily temperature. He found that alcohol, even in moderate doses, in many cases causes a lowering of the temperature of the body, the amount of this diminution averaging, as a rule, only some tenths of a degree; that only exceptionally is there noticed an elevation of the temperature consequent upon the administration of alcohol, and that not infrequently, at least after minute doses, there is no noticeable change; that the diminution of temperature in convalescents is, as a rule, less than in healthy subjects, or it may altogether be absent; that in those who habitually drink alcoholic stimulants the depressing influence of the drug upon the temperature is almost always wanting; that frequent repetition of the doses of alcohol diminishes their lowering effect upon the temperature; that the amount of diminution of temperature is directly proportional to the dose of alcohol ingested; and that, finally, the depression of temperature caused by alcohol is for the most part of but short duration, and the temperature soon returns to its previous grade. These statements are in accord with the results obtained by most investigators, as well as with those of my own experiments, and they may, therefore, be said to be entirely correct.

Although the action of alcohol on thermogenesis may be said to be an indirect one, judging from the light of modern research, it would be interesting to ascertain, if possible, how these heat phenomena are brought about. Here I may say that the deductions of Binz† must be laid aside as of no great value on the basis of recent elaborate researches.

The first calorimetrical studies regarding the actions of alcohol were made by Lewis‡ on rabbits. The author found that the drug sometimes produced a primary decrease of heat production, especially after small doses, followed, under the influence of large quantities, by an increase in the same phenomenon. Later, Wood and Reichert,§ who experimented on dogs, found varying results in five experiments, although in some of these heat dissipation kept in advance of the heat production, and, as a consequence, the temperature was lowered. Sometimes, however, the heat production was above the dissipation, resulting, in such instances, in a rise of the bodily temperature. The subject has been further investigated recently by Reichert.|| The able and thorough research of this author is based upon eighteen experiments performed on dogs, using the ordinary calorimeter described by him.¶ Reichert obtained increased heat production in five and decreased heat production in thirteen of the experiments. The difference did not depend upon the size of the dose employed. The range of variation in the general results was as much as sixty-five per cent. He determined, however, that alcohol does not affect the total quantity of heat produced; that the fall of the bodily temperature is due to the excess of dissipation and is in direct proportion to such dissipation. He infers, therefore, that in all likelihood, alcohol, by undergoing oxidation, yields energy in the form of heat, thus conserving the tissues and acting as a food. The question, nevertheless, cannot be considered definitely settled, and further experimentation in this respect is still wanting in order to reconcile, if possible, all beliefs. The results of Reichert, however, carry the weight of authority, and may be said to be correct in the present state of our knowledge of this interesting part of the subject.

On Febrile Temperature.—That alcohol exercises a depressing influence on febrile temperature, both in man and the lower animals, there can be no doubt. Thus, Bouvier** has

* *Deutsches Archiv f. Klin. Med.*, 1873.

† *Loc. cit.*

‡ *Journal of Mental Science*, vol. xxvi.

§ Wood's "Therapeutics," 8th edition, p. 343, 1891.

|| THERAPEUTIC GAZETTE, February, 1890.

¶ *University Medical Magazine*, January, 1890.

** *Loc. cit.*

noticed that the drug exerts a marked antipyretic action in animals laboring under pyæmic fever. Alcohol in such cases diminished the temperature as much as 8.5° C. ! and it was further found that the fever could be prevented if the alcohol was pushed before the appearance of the pathological condition.

The same results have been observed by Ringer and Rickards* in the case of man, but these authors assert that large and perhaps toxic doses of alcohol have to be ingested before the antipyretic effects occur. As observed by Bouvier,† Riegel,‡ and others, alcohol, even in large amounts, fails to affect the temperature in individuals accustomed to the use of the drug.

There can be no question that alcohol is able to reduce febrile, as it does normal, temperature both in the case of man and the lower animals. In the first instance the action is sustained by clinical observations, and in the second by experimental evidence. I myself have verified this antipyretic action of alcohol. To do this a feverish condition in dogs was produced by the administration of putrid blood.

Two days were employed in each experiment. During the first day it was ascertained only whether the specimen of blood used was sufficiently powerful to produce fever without causing other marked disturbances. During the second day the fever-producing agent and the alcohol were given to the animal at the same time. It was found, then, that the alcohol not only kept the temperature from rising, but even reduced it below the normal standard, these changes depending more or less upon the amount of alcohol ingested. It will be sufficient for me to detail the following experiment:

Experiment 32.—Dog; weight, 20.12 kilos.

FIRST DAY.

In the Normal State.

Time.	Temperature. C. scale.
First hour	39.4°
Second hour	39.4°
Injected 5 drops of putrid blood.	

In the Fever State.

End of first hour	40.5°
Injected 5 drops of putrid blood.	
End of second hour	41.5°
Injected 5 drops of putrid blood.	
End of third hour	41.8°

SECOND DAY.

Dog reduced to 10 kilos.

Time.	Temperature. C. scale.
First hour	39.6°
Injected 5 drops of putrid blood and 5 c.c. of alcohol, repeating the latter every ten minutes.	
End of second hour	39.6°
Injected 5 drops of putrid blood and the alcohol as before.	
End of third hour	39.6°
Injected 5 drops of putrid blood and the alcohol as before.	
End of fourth hour	39.0°
End of fifth hour	38.3°
End of sixth hour	38.8°

Other experiments gave identical results. The evidence, therefore, is conclusive.

(To be concluded.)

* *Loc. cit.* † *Loc. cit.* ‡ *Loc. cit.*

STATUS OF THE HYPODERMIC USE OF MERCURIALS IN THE TREATMENT OF SYPHILIS.

READ BEFORE THE PHILADELPHIA COUNTY MEDICAL SOCIETY, APRIL 25, 1894.

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A YEAR ago I read at a meeting of this Society a communication on the subject of hypodermic medication in syphilis, which I prefaced with the remark that "among the therapeutic methods which are largely employed on the continent of Europe, but have found very few adherents in this country, is, no doubt, the 'hypodermic treatment of syphilis.'" This part of my paper seems to have been one of the points that was principally attacked in the discussion following it, as well as in a subsequent classical paper by Dr. J. W. White on "The Present Position of the Hypodermic Treatment of Syphilis." While in this last-mentioned article Dr. White quoted the opinion of some thirty-two American dermatologists and syphilographers, only three expressed themselves favorable to this method; the others state themselves more or less opposed to it. He also states that in Germany some of the best men have pronounced against it, and in France Fournier, also Hutchinson in Great Britain, arrayed themselves against its use. In quoting Fournier, the rather feeble argument is brought forward that he feared the method would cause a rapid disappearance of patients while producing possibly a rapid disappearance of the disease.

One of the arguments advanced against this treatment as practised by me was its short duration, twenty-five or thirty injections being only given, as a rule. To impute that I stopped treatment after this, as has been stated, is to misquote me, as I distinctly recommended in my paper the internal use of iodides for some months thereafter. Relapses may require, moreover, further series of injections, as this is practised in all the so-called opportunists' methods for the treatment of syphilis. To say that, if the curative effects of mercury could be obtained in such a short period and with such small quantities, mercury must have some virtue when given in this way which it does not possess when administered by other methods, is partly true. No one will presume that, of the many ounces of mercury given during the internal treatment for years, all of it will be absorbed and become thereby the truly medicating quantity. Whoever has noticed the gastric and intestinal disturbances created by the mercurials, together with the colitis and even bloody diarrhœas caused by it, cannot for one moment doubt that much more of the mercury, so ingested, proves of greater danger to the gastro-intestinal tract than of benefit to the syphilis process. Besides all this, the perhaps universally-granted method of achieving the best and most lasting results—*i.e.*, the method by mercurial inunctions—rarely extends over thirty to thirty-five days, and it would appear, therefore, that, arguing from the same stand-point, mercury by inunction acquired the same mysterious curative virtues that have been so sceptically referred to as pertaining to the injection method. It is scarcely within the province of this article to take up the much-argued question of the superiority of the continuous and intermittent prophylactic method of medication over the expectant symptomatic one of the opportunists. I would merely refer in connection therewith to an article by Professor E. Lang, in which he criticises Professor Fournier's statistics of the relations of tertiary symptoms to the duration of treatment, and where he states, after analysis of the tables of Professor Fournier, that, so far from exerting a favorable influence in cases of syphilis, the method of prolonged treatment recommended by Professor Fournier is apt to produce a deleterious effect on the patient's general health by giving rise to various alimentary troubles associated with insomnia and other nervous symptoms of a somewhat grave description and favoring the occurrence of tertiary manifestations. For example, the statistics communicated by Professor Fournier to the First International Congress of Dermatology in 1889 show that the liability to tertiary manifestations increased in his patients until the third year after infection, a fact which is in direct opposition to the experience of the advocates of the opportunists' method, who have never met with the same liability to tertiary accidents during the first three years after infection in the patients under their observation (*Med. Week*, vol. i., No. 47). In the same manner Kaposi (*Wiener Med. Wochenschrift*, No. 4, 1894) expresses himself as opposed to the continuous treatment, which has been so strongly recommended by numerous syphilologists. He considers it as both morally and physically disadvantageous, and thinks the first treatment should be long and carefully executed. The treatment is to be repeated only when true syphilitic manifestations present themselves again. For this purpose mercurial inunctions should be considered first of all, and, where these are impracticable, injections should be next in order. The hypodermic method is eminently an expectant symptomatic one, and the divided opinions on the subject of continuous and intermittent prophylactic treatment *versus* that of the opportunists, by such authorities as just quoted, must also apply in principle to it.

It is to be conceded, therefore, that the objections to the hypodermic treatment are not alone those applying to this method of mercurialization, but one also of school,—*i.e.*, to the periodic treatment in the order as the reappearance of symptoms requires it. As perhaps a compromise between the continuous and intermittent treatment, Edward Cotterell, in his monograph on "Syphilis: Its Treatment by Intramuscular Injections of Soluble Mercurial Salts" (London, John Bale & Sons, 1893), recommends the intramuscular injections of the sozoiodolate of mercury, which he uses in the doses of about ¼ grain dissolved in iodide of sodium, once a week for about six or seven weeks, or until all skin and throat manifestations have disappeared, when once a fortnight will be found sufficient for another three or four months, and after this once a month for at least eighteen months to two years or longer, as circumstances may require. What such medication of about one-quarter of a grain of this salt, which contains about one-third of its weight or less of mercury, once a month can accomplish in its influence over the syphilis process is not obvious, and, after all, the effect of the treatment, the results of which he praises so highly, must depend on the massive injections during its first period.

As our methods of treatment are modelled

largely by the teachings of our schools, and as these latter in this country are greatly influenced by the literature of the English-speaking mother country, it is not astonishing that our practitioners should follow the teachings of Hutchinson and the practices of Fournier.

In Continental Europe the two predominating nationalities in medical education are those of France and Germany, and as independent medical centres their doctrines diverge often as greatly as their languages. Thus, the great centre for teaching syphilology in German-speaking Europe has always been Vienna, with its great and magnificent Allgemeinen Krankenhaus, whence for many years the teachings of Sigmund, Zeissl, Hebra, Kaposi, Neumann, and others have formulated the doctrines which dominated the German-speaking practitioners.

In view of this, and with the object of presenting a consensus of opinions, not alone of one country and one school, but of the leading minds occupied with syphilology in the principal medical centres of the world, I have undertaken to obtain from most of the teachers of this branch of medical science an expression of opinion in regard to this subject, and in response to my inquiries I have the pleasure to acknowledge the receipt of forty-four letters, all from men well known both as authors and teachers on this subject in the principal universities of Europe.

I first thought it necessary to ascertain if they employed the hypodermic method, for I cannot consider that any one can speak of its merits without experience. I further on desired to know the respective mercurial employed by them in this way, as much might be learned as to the utility of some particular one. Whether among these the soluble or insoluble ones are preferred I also tried to ascertain. Again, I considered it of importance to learn which was thought the most rapid in action and the most permanent in effect. To know if the method was employed in general or in isolated instances only seemed to me an important item in connection with the weight that the correspondent's opinion might carry. While the period of treatment by the hypodermic method seems generally conceded, an individual expression of opinion on this point was also solicited. The disadvantages and untoward effects of this treatment have been made use of so much as an objection to its employment, that I further begged for the experience of the individual observers in this respect. It seemed but proper, also, to ascertain if, in their opinion, the methods were well established or had an ephemeral existence only. The question whether this method should be continued or abandoned as a regular treatment for syphilis might with justice be asked of those who had experience with it; and, lastly and principally, it occurred to me to elicit what relation this treatment bore to the time-honored oral ingestion of the drug, and whether the correspondent considered the hypodermic method had largely superseded the administration of mercury by the mouth in the treatment of syphilis. While in these ten queries I endeavored to elicit the opinion of my correspondents, I also asked that such general remarks should be added as might be thought necessary and not covered by my questions.

Before entering upon the responses obtained to my questions, I should mention the names and titles of the gentlemen who have so kindly favored me with their answers.

Those from Vienna are the Professors of Dermatology and Syphilology, Kaposi, Neumann, Lang, and Hans von Hebra, whose clinics for syphilis and dermatology at the Allgemeinen Krankenhaus are known the world over; the Docents of Dermatology and Syphilis at the Vienna University, Drs. G. Riehl, Franz Mraceck, E. Kohn, and Max. von Zeissl; from Prague, the Professors of Dermatology and Syphilis at the University there, F. J. Pick and V. Janovsky; from Budapest, Professor of Dermatology and Syphilis, E. Schwimmer, and the Docent for the same branches, Dr. Havas; also Dr. Alex. Zarewicz, Docent at the University of Krakau; from Berlin, Professor Dr. O. Lassar, Professor Schweninger, and his assistant Dr. Buzzi, also Dr. J. Behrend; from Königsberg, Professor Caspary; from Bonn, Privy Medical Councillor Professor Dr. Doutrelepont; from Munich, Dr. Kopp, Docent at the University; from Helsingfors, Russian Finland, Professor Dr. George Smirnoff; from Kieff, Russia, Ord. Professor and Councillor of State Dr. M. Stoukovenkoff; from the St. Petersburg Military Medical Academy, Professor A. Polotebnow; from Charkow, Russia, Professor Brouen; from Amsterdam, Professor D. Van Haren Noman; from Florence, Italy, Professor Celso Pellizzari; from Genoa, Professor Roberto Campana; from Padua, Professor Achille Breda; from Bologna, Emerit. Professor Pietro Gamberini; from Pavia, Professor Angelo Scarenzio; from Catania, Professor Priano Ferrari; from Siena, Professor Domenico Barduzzi; from Lille, France, Professor I. Leloir; from the Military Medical Academy of France, Professor Dr. T. Poncet; from Geneva, Switzerland, Dr. H. Oltramare; from Berne, Dr.

Adolf von Ins, Docent at the University; from Edinburgh, Dr. Ed. Allan Jamieson; from London, Drs. H. Radcliffe Crocker, also S. Mackenzie and Ad. Saugster; from Glasgow, Professor McCall Anderson; from Brussels, Belgium, Professor Dr. Thiery, and from Gaud, Dr. Cruyl, chief of the Dermatological and Syphilitic Division of the Civil Hospital there; also, from this country, Dr. J. C. Wilson, Professor of the Practice of Medicine at the Jefferson Medical College, who was one of the first to use the calomel injections here.

It must be acknowledged that my correspondents represent the principal centres of learning in Europe, that they are all teachers of renown, and they must therefore truly picture the practices of those countries. It can hardly be said of them, as has been stated of the adherents of the hypodermic method, that they are therapeutic enthusiasts, or that they have been selected for the purpose of glorifying this treatment.

In answer to my first question, "Do you employ the hypodermic treatment for syphilis?" the answers are as follows:

Yes, by Kaposi, Neumann, Riehl, Mraceck, Kohn, Zeissl, Pick, Janovsky, Schwimmer, Havas, Lassar, Doutrelepont, Kopp, Brouen, Pellizzari, Breda, Baruzzi, and Wilson; very often,—Lang, Finger; as a rule,—Hebra; with predilection in private and clinical practice, —Schwimmer; in private practice rarely, in hospital practice almost exclusively,—Zarewicz; yes, but not exclusively,—Schweninger; yes, with preference,—Caspary, also Smirnoff; exclusively,—Stoukovenkoff; almost exclusively, with exception of cases of great hyperæsthesia, as in nervous diseases and brain syphilis,—Polotebnoff; yes, but not exclusively; in all cases of beginning secondary, excepting in pregnancy,—Noman; for some years intramuscular injections in preference to subcutaneous,—Gamberini; the benefits of the hypodermic method cannot be excluded from the treatment of diseases of an infectious nature,—Scarenzio; ordinarily,—Ferrari; yes, but not in all cases, —Leloir; yes, I have employed it, but I will employ it hereafter only in exceptional cases,—Poncet; only rarely now, after having had most disagreeable experience with insoluble preparations,—Von Ins; yes, very often, especially if I have the patient under my own eye, or if I wish a very rapid result,—McCall Anderson; yes, in grave cases, and more often in hospital than in private practice,—Cruyl; I use only inunctions in hospital practice, and can therefore say nothing regarding hypodermic injections,—Behrend; I find it impossible to answer the questions in brief, but have always been an enthusiastic supporter of the hypodermic method, and refer for further information to my book, which I send along,—Roberto Campana; employed it so little that I cannot possibly answer the questions,—Oltramare; no,—Jamieson, Crocker, Mackenzie, and Saugster; do not employ it,—Thiery.

As a *résumé* of the answers to the first question, we can say that thirty-six of the correspondents have used and use the hypodermic treatment in syphilis, while one does not answer the questions categorically, but refers to his writings on the subject, and seven acknowledge that they have not used or do not use the treatment, and these cannot, therefore, be considered in the answers to the future questions.

To the second question, "Which of the mercurials do you principally employ?" I have the following answers:

Corrosive sublimate (five per cent.), one injection every week (.05), five to eight injections in all, method introduced by my former assistant, Professor Lukasiwiecz,—Kaposi; sublimate, calomel, sozoiodolate, and peptonate of mercury,—Neumann; I use almost all known preparations,—Lang; sublimate and bicyanate, —Riehl; for subcutaneous, sublimate (1 to 100); for intramuscular, salicylate,—Finger; sublimate with chloride of sodium,—Mraceck; sublimate,—Hebra; sublimate (.1 to 20),—Kohn; sublimate, albuminate, and formamidate, — Zeissl; salicylate, — Pick; salicylate, thymol acetate, calomel, and sozoiodolate,—Janovsky; since two years generally sozoiodolate, and sublimate for more than ten years, —Schwimmer; gray oil, sublimate, and calomel,—Havas; yellow oxide and, of late, gray oil,—Zarewicz; sublimate,—Lassar; calomel and salicylate,—Schweninger; sublimate,—Caspary; in general, salicylate,—Doutrelepont; insoluble mercurials,—Kopp; in the clinic for the purpose of instruction, insoluble mercurials, also sublimate; in private practice only calomel,—Smirnoff; benzoate of mercury, as introduced by me,—Stoukovenkoff; formamidate, —Polotebnoff; salicylate,—Brouen; sublimate, calomel, gray oil, yellow oxide, salicylate, thymol acetate,—Noman; calomel, sublimate, double iodide of mercury, and sodium,—Pellizzari; sublimate, calomel, yellow oxide, salicylate,—Breda; sublimate,—Gamberini; calomel in vaseline oil,—Barduzzi; sublimate exclusively,—Leloir; calomel,—Poncet; salicylate, —Von Ins; bichloride,—McCall Anderson; sublimate in olive oil,—Cruyl; calomel,—Wilson.

A summary of the answers to the second

question would show that almost all the preparations of mercury generally employed for hypodermic medication are used by my correspondents, some only using one, others a few, while others, again, seem to use all the preparations more or less. The ratio in which the different preparations are used by them, as elicited by my answers, are: sublimate by 22 of the 36; calomel, 14; salicylate, 12; yellow oxide, 6; sozoiodolate, 4; gray oil, 4; formamidate and peptonate, also thymol acetate, each 2; while albuminate, cyanate, benzoate, and the double iodide were each employed by one out of the 36.

The inference to be drawn herefrom is that, after all, the corrosive sublimate seems to be most general in use for this purpose, with calomel next, salicylate following; yellow oxide, sozoiodolate, and gray oil, with the others more rarely used, gradually showing a decrease in their general employment.

While this does not show the individual preference of the different observers for soluble or insoluble preparations, the third question, "Which do you prefer, the soluble or insoluble mercurials?" was intended to bring out the preference, if any, for either of these two classes.

The answers are as follows: Soluble, Kaposi, Neumann, Riehl, Mraceck, Hebra, Kohn, Zeissl, Schwimmer, Lassar, Caspary, Stoukovenkoff, Polotebnoff, Breda, Gamberini, Ferrari, Barduzzi, Leloir, Von Ins, McCall Anderson, and Cruyl.

The insoluble mercurials are preferred by Wilson, Poncet, Scarenzio, Noman, Brouen, Smirnoff, Kopp, Doutrelepont, Havas, Janovsky, and Pick; depends on indications,—Lang; uses both,—Finger; prefers insoluble, but uses the organic soluble where indicated,—Zarewicz; undecided,—Schweninger; as per indications, soluble and insoluble,—Pellizzari.

It would appear therefrom that the preference for the soluble mercurial for hypodermic use is very decided, being indicated by twenty, while eleven state their preference for the insoluble preparations, one is undecided, two give no preference for either, and are governed by indications, while two declare they have no preference.

My fourth question, "Which, in your opinion, is the most rapid in action and the most permanent in effect?" seems to have been the most difficult to answer, and the responses obtained from my correspondents are in this instance not as direct as might be desirable. Thus, Kaposi states it different in every case, and says it cannot be answered in a general way; soluble,—Neumann; refers to publications,—Lang; soluble preparations perhaps equal in effect,—Riehl; insoluble preparations more energetic than soluble, effect more permanent,—Mraceck; soluble less energetic, less permanent,—Finger; sublimate,—Kohn; most rapid, calomel; saw relapses after all preparations; cannot prefer on that account,—Zeissl; cannot say that the other insoluble preparations are better in this respect,—Pick; calomel; but injections are painful, followed by infiltrations, notwithstanding vigorous antisepsis,—Janovsky; no difference with any of them,—Schwimmer; the soluble are more rapid, the insoluble more permanent,—Havas; yellow oxide and calomel; has not been able to satisfy himself as to the rapid and eminent action of salicylate,—Zarewicz; no real difference in action or in permanency in the different preparations,—Lassar; besides inunctions, salicylate,—Schweninger; probably calomel, which, after bad experience, I do not use any more,—Caspary; a great difference cannot be observed; also refers to literature from the clinic of Bonn,—Doutrelepont; rapidity of action, sublimate with chloride of sodium; permanency in effect, calomel,—Kopp; calomel and gray oil, the latter somewhat dangerous on account of the irregular absorption,—Smirnoff; the soluble mercurials, preferably those that do not coagulate albumin,—Stoukovenkoff; does not depend on the preparations, but on the individuality of the patient,—Polotebnoff; insolubles,—Brouen; yellow oxide and thymol acetate,—Noman; calomel,—Pellizzari; calomel is most rapid and durable in action,—Breda; sublimate more beneficial than calomel,—Gamberini; calomel gives the most prompt benefits, but all mercurials have about equal value,—Scarenzio; sublimate,—Ferrari; soluble,—Barduzzi; no answer,—Leloir; calomel,—Poncet; inunction,—Von Ins; never uses any other preparation than sublimate,—McCall Anderson; sublimate,—Cruyl; calomel is less rapid, but apparently more permanent,—Wilson.

The answers to this question are perhaps the least satisfactory of all, as they show seven of indirect, or rather of indefinite, character. The preference for rapidity in action and permanence in effect is given to calomel by nine of the correspondents, while two declare sublimate more rapid and calomel more permanent in effect. Six speak in favor of the soluble and five of the insoluble, five regard sublimate superior, while two endorse yellow oxide in this respect, and one each salicylate, gray oil, and thymol acetate.

My fifth question, "Do you employ the hypodermic method as a general treatment for syphilis?" is answered as follows:

Yes,—Kaposi, Kohn, Pick, Schweninger, Doutrelepont, Stoukovenkoff, Noman, Barduzzi, Cruyl, and Wilson; in some cases one can only apply the hypodermic method,—Neumann; gray oil in doses of .03 to .04 metallic mercury,—Lang; no, I prefer as first treatment inunctions,—Riehl; no answer,—Finger; only in proper cases,—Mraceck; generally,—Hebra; as a rule, inunctions; injections when these cannot be made,—Zeissl; yes, but as a secondary treatment after inunctions,—Janovsky; in my clinic nearly as the unique application of mercury, but also often inunctions,—Schwimmer; in exceptional cases only, as I can always get along with inunctions,—Havas; in my opinion, injections are most suitable and surest in hospital practice, otherwise the treatment is to be individualized,—Zarewicz; yes, besides inunctions principally in out-door patients,—Lassar; at least often,—Caspary; indeed,—Kopp; yes, decidedly as the principal method, excepting in tuberculosis, cancer, alcoholism, and non-syphilitic cachexia,—Smirnoff; usually,—Polotebnoff; as a general treatment,—Brouen; no,—Pellizzari; yes, in certain minor cases, especially with regard to clinical patients,—Breda; I do not use them in general; intramuscular injections as the prevalent treatment,—Gamberini; I prefer the hypodermic method as more simple and because it does not derange the stomach, also because the dosage can be more accurately regulated,—Scarenzio; the hypodermic method is by me ordinarily used,—Ferrari; no,—Leloir; no,—Poncet; formerly more, now only occasionally,—Von Ins; only as such,—McCall Anderson.

We see, therefore, from the answers to this question, that twenty-six responses indicate the general employment of injections as a treatment for syphilis, while one of the correspondents omits the answer to the question, and four answer in an indefinite and indirect manner, leaving inferences open therefrom, and five distinctly state that they do not generally employ it as a treatment for syphilis.

My sixth question, "What length of time do you continue the hypodermic treatment in the average case?" has brought the following answers:

Six to eight weeks,—Kaposi; soluble twenty-five days,—Neumann; gray oil, once in intervals from three to four days, and with beginning retrograde change once in five, seven, or fourteen days; altogether eight, ten, or twelve such doses,—Lang; twenty to forty injections and more in relapses,—Riehl; no answer,—Finger; until the disappearances of the existing manifestations,—Mraceck; on an average three to five weeks, in rare cases very much longer,—Hebra; up to three months, unless abscesses or painful infiltrations prevent continuation,—Kohn; until the manifestations of syphilis have entirely disappeared,—Zeissl; indefinite answer,—Pick; till the disappearance of the symptoms,—Janovsky; ten to twelve of sozoiodolate and of salicylate, twenty to fifty sublimate, twenty-five to thirty-five of formamidate, one and a half to two months on an average,—Schwimmer; in cases where I am forced to use the hypodermic method I continue until manifestations have disappeared,—*i.e.*, four to five injections,—Havas; usually until entire disappearance of symptoms,—Zarewicz; two months of .2 a week, or .1 a week, if patients are feeble,—Lassar; until disappearance of momentary syphilitic lesions,—Schweninger; about thirty days,—Caspary; as long as luetic symptoms are apparent and no mercurialism takes place; anyhow, twelve to eighteen injections of salicylate, each .08 to .1, in pauses from three to four days,—Doutrelepont; from six to eight weeks, one injection per week of 1 to 10 salicylate in paraffin oil,—Kopp; according to the cases, from one month to many months, from four to six, twelve, sixteen, or eighteen of .1 calomel,—Smirnoff; about one month,—Stoukovenkoff; according to case and always until disappearance of symptoms,—Polotebnoff; until disappearance of symptoms from four to six weeks,—Brouen; four to six weeks,—Noman; of calomel two or three injections at intervals of ten, of the soluble generally twenty to thirty days,—Pellizzari; of calomel three to six injections of .05 to .1, of sublimate .01 to .05 for one to two months,—Breda; no answer,—Gamberini; until all symptoms have disappeared,—Scarenzio; ordinarily, I make twenty-five to thirty injections, one every day,—Ferrari; variable,—Barduzzi; no answer,—Leloir; three to four injections of calomel,—Poncet; about four weeks for one attack,—Von Ins; until all symptoms are gone, and then use some treatment by the mouth,—McCall Anderson; during the primary and secondary stages,—Cruyl; in series of six to eight injections, repeated at intervals of two or three months or longer,—Wilson.

It is rather difficult to summarize the answers to question No. 6, although there seems to be a general tendency to continue the treatment up to the disappearance of all the symptoms, an opinion expressed by eleven of my correspondents; five continue the treatment

with sublimate injections for twenty or thirty days, one six to eight weeks, one two months, one three months; of calomel injections, from two to three, four to five, six to eight are given by six correspondents; eight, ten, and twelve of gray oil by another; ten to twelve of sozoiodolate, and twelve to eighteen of salicylate; while still another gives of the formamidate, in one and a half to two months, twenty-five to thirty-five injections; the benzoate is continued for one month by one, while three answer the question indefinitely, and three more not at all.

The answers to question No. 7, "What are the disadvantages and the untoward effects, if any, of the hypodermic treatment in your experience?" are somewhat variable and will be found difficult to classify.

The answers are as follows:

Reference to his publications,—Kaposi; in some cases dysentery,—Neumann; if only one dose, as stated, is injected at a time and the period of administration is observed, there will be no surprises from disagreeable accidents,—Lang; nothing,—Riehl; in the intramuscular injections of salicylates made superficial not very painful infiltrations; I never saw abscesses only with calomel, which I do not use; therefore, hypodermic injections have for practical reasons a disadvantage that they have to be made daily,—Finger; with antiseptic precautions we have only the ordinary appearance of mercurialism,—Mraceck; when well applied, no disadvantages; had within ten years scarcely any untoward effect,—Hebra; abscesses, induration, pains,—Kohn; I have met, as with inunctions, salivation and gingivitis; with good injections and antiseptic precaution, I have seen with no preparation, soluble or insoluble, any abscesses,—Zeissl; I have never met with a fatal accident,—Pick; I could not see disadvantages, only infiltrations after calomel, and the best effects in regard to treatment,—Janovsky; I am always satisfied with this method, and have never seen disadvantages when injections were made with a clean needle and the general postulates of cleanliness,—Schimmer; in spite of careful dosage, assimilation of mercury is individual and not controllable; I have seen very marked mercurialism in some cases, such as anæmia, headache, anorexia, tremor, diarrhœa, and marked depression,—Havas; after hypodermic use of calomel I have seen one fatal case; after gray oil follow infiltrations and abscesses; gray oil is, moreover, very slowly absorbed,—Zarewicz; none at all,—Lassar; none,—Schweninger; no disadvantage from sublimate injections where they are well borne; the advantage is accurate dosage,—Caspary; infiltration at the place of injection, stomatitis, and other mercurial symptoms, as they happen with every method,—Doutrelepont; cleanliness, prompt involution of symptoms, accurate dosage; applicable, especially in polyclinic and private practice, where inunction cannot be very well used,—Kopp; only in isolated cases marked pain, very seldom an abscess; the curative effect rarely ever fails,—Smirnoff; with correct employment one cannot have disagreeable complications,—Stoukovenkoff; advantages, rapidity and permanence of action, cleanliness of the method; disadvantages, at times local pain,—Polotebnoff; pains and indurations, sometimes at the place of puncture,—Brouen; sometimes pain for twelve to fourteen hours; in some very rare cases an abscess,—Noman; pain in the use of sublimate and the other soluble salts; small abscesses occasionally when using calomel,—Pellizzari; with calomel in about four hundred cases, two abscesses, two enterocolites, four stomatites, one sciatica; with sublimate one abscess, one stomatitis; with yellow oxide, in about one hundred cases, two enteralgias, with diarrhœa; with salicylate in eighty-five injections, one fever, five infiltrations, one gastroenteralgia,—Breda; indefinite answer,—Gamberini; unless you exceed proper dose, no danger or disadvantage,—Scarenzio; I have not one disadvantage to report,—Ferrari; none,—Barduzzi; refers to his publications,—Leloir; the injections of calomel are often painful; the action of calomel causes a general depression,—Poncet; stomatitis, bloody stools, hæmatemesis, collapse, which fortunately does not end fatally,—Von Ins; indurations, but rarely abscesses if proper precautions are used,—McCall Anderson; refers to literature,—Cruyl; pain, occasionally severe, though transient, and now and then nodular infiltration of tissues; in a very few instances abscess formation,—Wilson.

An analysis of this last series of answers shows that four correspondents give no direct information on the subject, but refer to publications; seventeen state that there are no disadvantages from the use of the soluble mercurials; while four mention the following disadvantages from the injection of this kind: one, dysentery; two, abscesses; one, mercurialism. In regard to insoluble mercurials, six report no disadvantages, while four report abscesses from calomel and from gray oil; two of the correspondents seem to have been particularly unfortunate with their experiences; one reports with calomel two abscesses, two entero-

colites, four stomatites, one sciatica; with sublimate, one abscess, one stomatitis; with yellow oxide, in about one hundred cases, two enteralgias with diarrhœa; with salicylate, in eighty-five injections, one fever, five infiltrations, and one gastro-enteralgia; while the other reports stomatitis, bloody stools with hæmatemesis, collapse, which, fortunately, did not end fatally. Truly, their experience seems to be quite at variance with that of others. One correspondent alone refers to a fatality from the use of calomel.

In view of the fact that it has been stated that the hypodermic method is not one that is well established, and that it lacked perfection, question No. 8, "Do you consider the hypodermic method well established?" is intended to elicit answers of great importance.

The answers are as follows:

Yes,—Kaposi, Neumann, Riehl, Zeissl, Pick, Janovsky, Caspary, Doutrelepont, Stoukovenkoff, Noman, Pellizzari, Barduzzi; it is only beginning to be appreciated in America,—Wilson; yes, certainly,—McCall Anderson; indefinite,—Von Ins; indefinite,—Poncet; no answer,—Leloir; the wide adoption of this method vouches for its stability,—Scarenzio; indefinite,—Gamberini; yes, I consider the hypodermic method as perfectly established on the best basis,—Breda; I believe this method is well established,—Polotebnoff; yes, perfectly,—Smirnoff; yes, I made until to-day more than one thousand injections without seeing abscesses; sometimes they are somewhat painful, there are nodular indurations at the point of injection, but the discomfort soon disappears,—Kopp; no,—Schweninger; perfectly,—Lassar; as a method by which the mercury can be introduced into the organism, yes; as exclusive treatment of syphilis, no,—Zarewicz; for the above-cited reasons it undoubtedly needs reform,—Havas; perfectly,—Schwimmer; a great many more experiences must be made in this method,—Kohn; very well,—Hebra; well established as a therapeutic method,—Mraceck; I consider the injection method well established, and on account of its accurate dosage scientifically rational,—Finger; I am perfectly satisfied that the method will gain adherents,—Lang.

While, in answer to this question, four of my correspondents give an indefinite answer from which no deduction can be drawn, one fails to state anything, and three consider it as not well established, twenty-eight give an unqualified approval as to the firm establishment of this method.

It has been further stated that many of those who had used the hypodermic method, among them some of the best men both here and abroad, after thorough trial have discontinued its employment in the treatment of syphilis. My question No. 9, "Should it, in your opinion, be continued or abandoned as a regular treatment for syphilis?" will probably show the opinion of syphilographers abroad on this point.

The answers are as follows:

Continued,—Kaposi, Neumann, Mraceck, Hebra, Pick, Janovsky, Caspary, Doutrelepont, Kopp, Brouen, Ferrari, Barduzzi; by all means continue,—Wilson; to be continued always according to indications,—Cruyl; continued in suitable cases,—McCall Anderson; there is nothing against the hypodermic injections of soluble mercurials, and I therefore only use those,—Von Ins; this method is to be continued for grave cases,—Poncet; to continue, but to be employed with method,—Leloir; without doubt,—Scarenzio; I taught it as the most commendable,—Breda; I consider the hypodermic method is to be continued, but not as a general and exclusive treatment for all cases of syphilis,—Pellizzari; it should be continued as a regular treatment for syphilis without very alarming complications; in cases of iritis or brain syphilis, etc., we prefer the inunction treatment,—Noman; I will never give up this method,—Polotebnoff; syphilis requires a systematic treatment during two to three years, with intervals always more prolonged after each treatment,—Stoukovenkoff; calomel injections will, aside from inunctions, be the most powerful and most reliable method for mercurial treatment; calomel injections act even stronger than inunctions,—Smirnoff; I am not ready to answer,—Schweninger; it is indispensable and will be always continued,—Lassar; there are cases where the hypodermic method cannot be replaced by any other; for this reason it must be retained in the treatment of syphilis, otherwise syphilis may on an average just as well be treated by other methods,—Zarewicz; in some cases the hypodermic method is extraordinarily advantageous for patients and physicians, but as regular treatment I prefer inunctions,—Havas; I do not say that the other methods are not used, but I think that we could not be any more without it,—Schwimmer; I believe that we ought not to give up any of the heretofore used methods, with the exception of fumigation,—Zeissl; in some cases this method will always be made use of,—Kohn; I do not use the injections exclusively; I differentiate the two already-mentioned methods of mercurial treatment:

A, energetic (1) inunctions and (2) intramuscular injections with insoluble salts, equal in action; B, mild (1) internal medication, (2) hypodermic medication with soluble salts; these also equal each other in effect. With us in Austria the inunction treatment is still very much practised. I use it also when energetic action of mercury is indicated, and I make intramuscular injections when inunctions cannot be made either by inclination to mercurial eczema or for social reasons. No antisyphilitic treatment can be so easily kept secret as the injections. When I consider a mild mercurial effect indicated, then I use the protiodide, the tannate, or the sublimate internally; where gastritis and enteritis contraindicate the internal treatment, I use hypodermic injections of sublimate,—Finger; yes, for relapses in cases not grave,—Riehl; with limitations, which I pointed out, the continuation of the method is to be recommended,—Lang.

From the above answers it can be readily seen that the large majority of my correspondents are unqualifiedly in favor of continuing the method; while some place restriction on its use, or qualify indications for it, they, nevertheless, see and recommend a large sphere for its employment; while two of the correspondents do not answer the question and four give only an indefinite answer, thirty of the thirty-six favor the continuance of the method.

This brings us to the tenth and last question, "Do you consider it has superseded to a great extent the administration of mercury by the mouth in the treatment of syphilis?"

The answers to this question are important, especially to verify or otherwise stamp as unwarranted the statement that I have made in my previous paper, "That in the principal medical centres of Continental Europe little or no mercury is given internally any more."

The answers to this question are: Yes,—Kaposi, Neumann, Mraceck, Zeissl, Pick, Lassar, Schweninger, Doutrelepont, Barduzzi; it has with those who have given it a systematic trial,—Wilson; no,—Cruyl, McCall Anderson; no, I do not believe it, as the facility of the internal use of mercury in contradistinction to the inunctions and injections will always bring physicians and patients back to the internal use, which, with proper precautions, has scarcely any disadvantageous consquences,—Von Ins; I do not think that the hypodermic method is intended to disparage that of stomachal ingestion,—Poncet; no answer,—Leloir; I hold that the method of administration by the mouth is inferior to the hypodermic injections,—Ferrari; I cannot see any contraindications to the hypodermic methods other than to any other method of mercurial medication,—Scarenzio; the regular administration of mercury by the mouth, used for such a long time, merits in general the preference when the patients follow the rules laid down for it,—Gamberini; I prefer the method in grave cases and when I think it would not be done justly and regularly by other methods,—Breda; I believe not,—Pellizzari; it has superseded the administration of mercury by the mouth; we only employ the latter treatment in milder relapses of syphilis,—Noman; I think this method preferable to all others,—Brouen; the ingestion by the mouth I consider as perfectly superfluous,—Polotebnoff; the hypodermic method, by its promptitude and exactitude, surpasses by far the method by the mouth; the symptoms, for instance, which disappear in a month during oral ingestion, disappear in a week by the hypodermic treatment,—Stoukovenkoff; yes, because the internal treatment, either immediately or after some time, mostly deranges the stomach and thereby disables it from taking up further quantities of the remedy,—Smirnoff; administration of mercury by the mouth I think the most unreasonable and inexact thing in the world; nobody ever knows how much will be absorbed; finally, it very often produces irritation of the stomach and intestinal tract,—Kopp; I have ordered the internal use only seldom,—Caspary; the hypodermic method, in regard to its intensity, may be said to stand between internal administration and inunctions; a special preference over the oral ingestion it has not,—Zarewicz; I am a decided opponent of the indiscriminate mercurialization, not alone because it is superfluous, but because it is also disadvantageous to the organism, producing neurasthenia, and because it only acts on manifest syphilis symptoms,—Havas; I regard the value of this method in every case more efficacious than the internal administration of mercury,—Schwimmer; yes, because the administration of mercury by the mouth is insufficient,—Janovsky; the internal use of mercury will be permissible only, then, when we cannot reach our objective by injections,—Kohn; it has,—Hebra; I do not think that we ought to monopolize one method of treatment; our object in the therapy of syphilis is to get mercury in sufficient quantity into the organism; it depends entirely on the special case which way to choose to reach this end in the safest manner,—Finger; the treatment with mercury by the mouth is also good sometimes,—Riehl; certainly,—Lang.

In answer to this question, I have elicited twenty-three unqualified statements that the hypodermic method, in the opinion of my correspondents, had superseded the administration even of mercury by the mouth; some of them deriding the latter method and claiming positive disadvantages for it. Five of my correspondents give an indefinite answer from which no conclusion can be arrived at on this point, while seven out of the thirty-six do not consider that the hypodermic method has superseded that of oral ingestion; in many cases admitting, however, the value of the hypodermic method.

The general remarks made by twenty-two of my correspondents are more on the general treatment of syphilis, and so little to the objective point of this paper that I do not feel justified in prolonging its already vast scope by their introduction. In them many state their preference for inunction, which seems, especially with the Germans and Austrians, a general method of election. The courteous and lengthy communications of some of my honored correspondents well merit their reproduction as a consensus of opinion on syphilis and its treatment generally. It has been, however, my aim to present only such opinions as were directly on the injection treatment; and I must therefore reluctantly decline to introduce subject-matter foreign to my purpose.

When we analyze my communications geographically, it will be found that we have fourteen from Austria, six from Germany, four from Russia, one from Holland, seven from Italy, two from France, two from Switzerland, five from England, two from Belgium, and one from this country.

It seems to me that opinions on the subject of this method of treatment are divided somewhat by geographical lines. Thus, it will be found that among the five English correspondents only one endorses the treatment. This we can attribute no doubt to the teaching of Hutchinson and its influence. From France my two correspondents seem not greatly impressed with the utility and scope of this method; as much may be said of the two correspondents from Belgium and the same number from Switzerland. The methods of Scarenzio are still adhered to by the Italian school, while the practice of Russia and Holland seems to lean towards the German and Austrian teachings. Five out of the six German correspondents appear as adherents of the hypodermic method, while of the fourteen Austrian correspondents, probably all but two may be said to be warm supporters of the injection treatment.

I could quote a number of Americans who have employed this treatment for some time, and have both in literature and privately expressed their favorable impressions of its value. I found it expedient to introduce but one of its supporters, because he was, perhaps, the earliest author in this country on the subject of calomel injections, and because by his position as a teacher and practitioner he can be said to carry more weight than others who followed in his footsteps, and whom I have, therefore, not felt called upon to cite here. It must be remembered that I have thrown out the testimony of all who have not been able to state their experience with this method. It should also be remembered that of thirty-two correspondents of Dr. White, in his admirable paper on this subject read before this Society, only seventeen have had experience with the method, of which fourteen were opposed to it and three spoke in its favor, while fifteen expressed themselves as having had little or no experience with it. Condemnation without trial or judging *a priori* without experience can hardly be assumed as a fair means to arrive at medical opinions. There is no doubt that the hypodermic method is not all or everything that is needed in the treatment of syphilis, but I think that it is one of the methods of treatment for syphilis which has a wide application and a vast field of usefulness.

The principal objection raised against it, that it cannot be used continuously for a number of years, it shares in common with probably the most efficacious method of medication known in the therapy of syphilis,—*i.e.*, the mercurial inunctions. That after its use there may appear again and again relapses is as true as that they may do so after inunctions. In these it is necessary to repeat the series of injections as well as it becomes necessary to repeat the treatment by inunction from time to time with the reappearance of the lesions which make manifest the recrudescence of the disease. With every series the lesions appear less severe and the necessity for mercurialization less marked. If, with the non-appearance of the symptoms within a period of years, the necessity for mercurial treatment ceases, the assumption for a cure of syphilis by this method is as much justified as by a continuous oral ingestion of mercurials during that time. That there are quite a number of cases in which there is no reappearance of syphilitic lesions after the first or possibly the second series of injections, especially if the series has extended over a sufficiently long period of time, and that the necessity for further medication then ceases, is a fact

quite as obvious as that reported and observed by many, that syphilis will disappear often even without treatment, or under the influence of proper hygienic, dietetic, and sanitary conditions only.

If I am justified in drawing any conclusions from the answers to my questions, I would sum up as follows:

1. The hypodermic use of mercurials is largely employed in the treatment of syphilis in Continental Europe, with probably the exception of France.

2. While all of the many preparations of mercury find employment in this treatment, the one by preference is sublimate, next in order calomel, then salicylate, followed by yellow oxide, also sozoiodolate and gray oil; the others seem to be favored by individual adherents only.

3. That there appears to be a decided preference for the soluble over the insoluble preparations.

4. As to rapidity of action and permanence in effect, calomel seems to hold the foremost place.

5. There seems to be no doubt, judging from my investigation, that in that part of the European continent mentioned the hypodermic method (I include here also the intramuscular injections) is being freely employed as a general treatment for syphilis.

6. The period of time through which the hypodermic treatment is being continued in the average cases cannot be said to be strictly limited, but should be until all symptoms have completely disappeared.

7. The opinions of my correspondents on the disadvantages and untoward effects of this treatment would show that they are not nearly as frequent or as serious as has been supposed, and that they are by far more frequent with the insoluble than the soluble preparations. It seems to be the general opinion of a majority of my correspondents that serious complications may be avoided with proper care and cleanliness. The testimony of a few individual ones seems in this respect greatly at variance with the experience of a large majority. Accidents such as may arise in the course of all methods of mercurialization cannot, of course, be specially attributed to the hypodermic treatment.

8. The question as to the firm basis on which the hypodermic method is established is answered almost universally in the affirmative.

9. The consensus of opinions of my correspondents as to whether the hypodermic method should be continued or abandoned as a regular treatment for syphilis tends towards the almost universally expressed desirability of its continuation, although in the minds of a small minority with certain limitations or restrictions.

10. There seems no doubt, from the nature of the responses I have received and quoted above, that I was justified in claiming some time ago "that in the principal medical centres of Continental Europe little or almost no mercury is given internally any more in the treatment of syphilis," and that in the countries mentioned hypodermic medication has superseded oral ingestion of mercurials to a great extent.

A CLINICAL INVESTIGATION TO DETERMINE THE VALUE OF CORROSIVE SUBLIMATE AND THE GRAY OIL ADMINISTERED HYPODERMICALLY IN THE TREATMENT OF SYPHILIS.

By Orville Horwitz, B.S., M.D.,
Clinical Professor of Genito-Urinary Diseases in the Jefferson Medical College; Surgeon to the Philadelphia Hospital, etc.

THE experience of many investigators is adverse to the employment of the insoluble salts of mercury hypodermically.

The general belief is that the use of these salts results in great pain and produces callosities, abscesses, and stomatitis. Our experience corresponding with those of other observers, we some time since determined to enter upon a clinical investigation to ascertain, if possible, the value of both corrosive sublimate and the gray oil in the hypodermic treatment of syphilis.

These remedies, it is believed, we have fairly and fully tried. The result is here recounted, that all may judge of the value of our observations.

The first experiments were made with a view to ascertain whether the disease could be aborted after the method suggested by Bronson, who has recently advised hypodermic injections of mercurials into the chancre and the indurated lymphatic glands in its neighborhood. His views are based upon the theory that the initial lesion is the storehouse of the syphilitic poison, or the point during the primary stage from whence the disease is disseminated; and that the mercurial being brought into direct contact with the micro-organism which causes syphilis, necessarily exerts its germicidal influence, destroys it, and thus aborts the disease.

Ten cases were selected and placed under treatment. A quarter of a grain of corrosive

sublimate was administered daily to each hypodermically until thirty injections had been made. It was possible to insert but three or four injections at the site of the chancre; the remainder were introduced into the indurated glands about the groin. These injections were attended with slight pain and more or less œdema of the penis.

A suppurating bubo made its appearance in but one instance. Whether or not this was caused by the treatment could not be determined, as a certain proportion of syphilitic cases will always be accompanied by a complication of the kind.

In nine of the cases the symptoms were delayed, and did not appear for a period varying from between two and nine months after all treatment had been discontinued. The manifestations were very mild, taking on the form principally of mucous patches, slight alopecia, and macular eruptions. In the tenth case, although over one year has elapsed since the disease was contracted, no untoward symptoms have appeared.

With this patient the doubt as to a correct diagnosis must be taken into account, for the origin of the disorder might not have been syphilitic.

As far as can be determined, this method of treatment simply delays the appearance and mitigates the symptoms of the disease, rendering it difficult to give a correct prognosis, and leaving it uncertain in the mind of the practitioner how long treatment should be continued.

Sixty cases of secondary syphilis were selected for the purpose of investigation and to determine as far as practicable the value of this method of routine treatment. The quantity of corrosive sublimate employed was a quarter of a grain to each injection. Each patient received thirty injections, making, in all, eighteen hundred hypodermic insertions.

Fifteen patients were inmates of the Philadelphia Hospital, thirty of the Jefferson Medical College Hospital, and fifteen were selected from private practice.

The cases that were treated at the Philadelphia Hospital quitted the establishment within a month and could not be followed; of those treated at the Jefferson Hospital, nine have not been heard from since being discharged; of the remaining twenty-one still under observation, eleven have relapsed, and have been placed on other forms of treatment. Of the fifteen private cases, four have not been heard from since they have been discharged; and of the eleven remaining cases, three have relapsed, and eight up to the present time remain in good health. The longest period that has elapsed since the treatment of the last case is six months. Most of these relapses occurred within from four to eight weeks after the injections were discontinued. None of the patients made any special complaint of pain produced by the injection; in no instance was an abscess formed, nor was there induration about the seat of the injection. When relapses took place, several of the patients were desirous of returning to the use of the hypodermics. In all the rapid disappearance of the symptoms was remarkable. In most cases, as a rule, constipation prevailed, and the employment of salines became necessary. In no instance was salivation produced.

So that in sixty patients on whom the hypodermic method had been employed, on each of whom thirty injections were administered, twenty-eight disappeared and are unaccounted for; the remaining thirty-two have been carefully watched.

Of this number, fifteen relapsed within eight weeks after treatment had been discontinued, leaving seventeen free from disease. The longest period that has passed since any of these has received treatment is ten months.

The advocates of this method advise that, when recurrence takes place, injections be resumed, reducing the dose, however, to one-sixth of a grain of corrosive sublimate, returning to the mercurial whenever the disease reappears, and reducing the amount of the drug on each occasion.

This rule was not followed in the relapsing cases here referred to after thirty injections had been used without good results. It appeared to us merely a symptomatic method of treating the disease, which is generally fraught with so much danger, tertiary lesions usually following.

The supporters of the routine method of treatment by hypodermic injections of corrosive sublimate agree that about forty per cent. of the cases relapse. It will be observed that with us well-nigh fifty per cent. recurred, and that the disease returned in a remarkably short time after treatment had been discontinued, the longest period of exemption being eight weeks.

In order to determine the value of the hypodermic injections, when used in conjunction with other methods, nineteen cases were submitted to treatment. In five of these the lesions were situated upon the face, and were a source of great annoyance; hypodermics of corrosive sublimate were administered, when the eruptions disappeared with remarkable rapidity. Mercury was then administered by the mouth.

In fourteen cases of severe syphilitic poison a systematic course of treatment was pursued. For a period of four months the mercurial was administered by the mouth, and instead of making use of inunctions of mercury for two weeks, which is the usual method, injections of a sixth of a grain of bichloride were given daily for that length of time, when these were discontinued and the administration of the drug by the mouth resumed.

In the case of a married man who contracted syphilis in the absence of his wife during the summer, and who expected her return within three weeks, and who was most anxious that no symptom of the disease should be present on her return home, eighteen hypodermics were administered, with the result that at the end of twenty-one days he was perfectly free from all manifestations.

In two cases of iritis fifteen injections of corrosive sublimate were administered in each case, the patients taking in conjunction ten grains of the iodide of potassium three times daily, when the symptoms rapidly disappeared.

In a rare case of gumma of the conjunctiva, occurring in the clinical service of Professor Thompson, eight hypodermics caused its disappearance, when treatment was continued by the mouth.

In four cases of relapsing syphilis hypodermics of gray oil were given once a week for six weeks, and although nearly a year has elapsed since treatment has been discontinued, these patients, who were constantly suffering from manifestations of the disease, have remained free from any symptoms. With these cases all other methods heretofore employed had failed.

In one case of gumma of the palate the pain produced by the corrosive sublimate was so severe that the injections had to be discontinued after two administrations, when other means were resorted to.

In three women who were inmates of the venereal ward of the Philadelphia Hospital, and who had been on a continuous course of treatment by the mouth before the hypodermic method was employed, slight ulceration of the gums was produced, and the injections were necessarily discontinued.

In one case of gumma of the brain fifteen hypodermics of the gray oil, in conjunction with small doses of iodide of potassium, effected a rapid cure.

In one case of syphilitic insanity six hypodermics of gray oil were given with marked improvement.

In two cases of syphilitic locomotor ataxy the staggering gait, the great pain, and the vertigo have almost entirely disappeared, and there has been a progressive increase of weight and strength; both patients, who were unable to work when first placed under treatment, have returned to their respective occupations. The gray oil was likewise employed in twelve cases of obstinate skin-eruptions which refused to yield to other methods of treatment.

In eighteen cases of secondary syphilis, which had shown constant tendency to relapse during a course of two years' treatment, and in one case of malignant syphilis, marked improvement was manifested by the treatment here recommended.

The following table exhibits the number and conditions of the cases and the number of hypodermics of corrosive sublimate administered in each instance:

No. of Cases.	Conditions.	No. of Hypodermics.
10	Attempt to abort the disease	300
60	Routine treatment	1800
6	Obstinate skin-eruptions	180
5	Eruptions on the face	110
14	Conjunction with systematic treatment	196
1	Married man	18
2	Iritis	30
1	Gumma of conjunctiva	8
99		2642

A second table is submitted, exhibiting the conditions of the patients and the number of hypodermics of gray oil administered in a given number of cases:

No. of Cases.	Conditions.	No. of Hypodermics.
2	Gumma of the brain	12
1	Insanity	6
2	Locomotor ataxy	12
4	Relapsing syphilis	24
12	Obstinate skin-eruptions	72
18	Termination two years' course treatment	108
1	Malignant syphilis	6
40		240

From a careful study of the clinical cases just cited the following deductions may be drawn:

1. Hypodermic medication will not abort the disease.

2. That it should not be employed as a routine method of treatment.

3. That the production of abscesses or of ptyalism by this method must be very rare.

4. Injections of corrosive sublimate give rise to trifling pain, but not to callosities.

5. The gray oil gives rise to slight pain and always produces induration.

6. The gray oil employed in this manner is more dangerous than corrosive sublimate, and when administered the patient should be carefully watched.

7. In suitable cases, when properly employed, these remedies are among the strongest weapons possessed by the profession wherewith to fight the disease.

8. When employing corrosive sublimate, a quarter of a grain should be administered with each injection, provided the patient has not previously been submitted to treatment; if mercurials have already been employed by the mouth, the quantity employed should be one-sixth of a grain.

9. Hypodermic injections of corrosive sublimate are of undoubted value when the lesions appear upon the face and a rapid impression is desired; likewise when some important structure, as the eye or brain, is attacked.

Mercurials may be employed hypodermically as a substitute for inunctions in a systematic course of treatment.

They may be used with advantage when time is an object.

In cases of relapsing syphilis where other methods have failed, injections have completely controlled the outbreak.

In syphilitic diseases of the nervous system their use generally produces most satisfactory results.

They are frequently beneficial in those forms of eruption that have proved rebellious to other treatment.

10. It is well to employ the gray oil in cases of severe secondary syphilis where there is evidence of a tendency to relapse during the course of a two years' treatment, winding up with a weekly administration of a hypodermic for the space of six weeks. The patient should then be placed upon small doses of iodide of potassium for the period of three months. This treatment is valuable in the obstinate relapsing tertiary variety of the disease, and has proved more potent in our hands than any other method. In nervous syphilis it is far superior to inunctions.

Finally.—This mode of treatment is unhesitatingly recommended to the profession, under the conditions already laid down, as the most reliable and active that can be employed.

ASEPSIS IN OBSTETRICS.

In a short paper in the *Brooklyn Medical Journal* of April, 1894, GORDON gives the following directions as those employed by himself in obstetrical practice. He instructs the patient to have ready two wash-bowls and a hand-brush for each, a dozen pieces of boiled cheese-cloth for wash-cloths, and the following prescription for lubricating the hand:

℞ Hydrarg. bichl., gr. i;
Glycerin, ℥ii. M.
Also a bottle of bichloride-of-mercury tablets.

When labor begins have the bowels emptied by an enema and the external genitals thoroughly cleansed with soap and water. Before a digital examination the parts are bathed by the nurse with a bichloride-of-mercury solution (1 to 2000), and the hands and arms of the examiner thoroughly scrubbed with soap and hot water, rinsed, and again washed in a 1 to 2000 bichloride-of-mercury solution, the fingers lubricated with the antiseptic glycerin solution, the hand to be immersed in the bichloride solution before each succeeding examination, which are as few as possible. At the close of the third stage the external genitals are cleansed by the nurse (whose hands have been rendered aseptic) with an antiseptic solution, and a napkin applied, which has been wrung out of a bichloride-of-mercury solution and dried.

Should catheterization become necessary, the same antiseptic precautions are observed. No douches are used after normal labor. In instrumental cases the instruments are first immersed in boiling water and then in a five-per-cent. carbolic-acid solution. After delivery, a hot carbolized douche is administered.

STERILIZATION OF HYPODERMIC SOLUTIONS.

D. MARINUCCI has found large numbers of living germs, some of a harmful nature, in freshly-prepared hypodermic solutions of strychnine sulphate, morphine hydrochlorate, atropine sulphate, eserine, etc. Sterilization by heat did not affect the therapeutic value of strychnine and quinine, but partly checked the action of morphine and atropine. Eserine and atropine solutions are said to be best prepared with a solution of corrosive sublimate (1 in 1000), which renders them aseptic without modifying their therapeutic properties. It is suggested that all such solutions should be renewed every fourteen days.—*Druggist's Circular and Chemical Gazette*, March, 1894.

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Leading Articles.

THE TREATMENT OF ENLARGED CERVICAL GLANDS.

LEAVING out of consideration malignant disease and general lymphadenoid enlargement associated with profound blood-changes, enlarged cervical glands as they appear to the clinician can generally be classed as irritative or tubercular. These enlarged glands are commonly found in the neck, the axilla, or the groin, by far the large majority being placed in the cervical region.

They are more frequent in children than in adults. The simple irritative form is characterized by a somewhat rapid course, terminating speedily in either resolution or suppuration. The tubercular form is slow in course, progressive, prone to involve an entire chain or, indeed, all the glands of the neck, and usually terminates in caseous degeneration of the deeper glands and in softening and ulceration of the skin overlying those more superficially placed. After the process has developed thus far, the tubercular matter may become encapsulated, or may be spontaneously extruded; the patient may definitely recover. Frequently, however, the disease passes down to the mediastinal glands, becomes wide spread, and death ensues. The entrance-point of infection is usually the mucous membrane of the nose, the mouth, or the pharynx.

The frequency of cervical tubercular adenitis makes the question of therapeutics one of great importance. In the discussion on this subject in the Section on Diseases of Children, at the annual meeting of the British Medical Association, Teale took the ground "that (*British Medical Journal*, No. 1717, 1893) whenever septic material is contained in the system, we rest not until it is expelled and its burrows are laid open and disinfected. In doing this the surgeon must make it an artistic study how to effect his purpose with the smallest possible amount of blemish. The ugly scars and unseemly depressions, once so familiar in scrofulous necks, should be deemed an opprobrium of surgery; while to delay operation until the skin is thin, red, and ready to break down, or has already given way, should be looked upon as mischievous trifling."

He expresses the hope that the time is not far distant when the absolute inutility of painting the skin, in the hope of influencing a caseating gland deeply seated beneath muscle and fascia, will be fully realized by the professional mind, and lays down the following propositions for the guidance of the surgeon in the operative treatment of these cases.

1. Whenever fluid—that is, pus—can be detected in connection with a diseased lymphatic gland, the operation should be done before the skin becomes red and thin.

2. When the diseased gland is subcutaneous,—that is, not beneath the deep fascia or muscle, and has been completely removed,—the least scar will result if neither stitches nor drainage-tube be used, especially if it be possible to leave the wound uncovered by dressing and exposed to the air, so that the edges may be drawn and glued together by drying lymph.

3. If the diseased gland is beneath the muscle or muscular fascia, then a drainage-tube must be used, and the edges of the wound must be united by suture. The best drainage-tube is the gilt spiral wire, especially as it may have to remain from two to eight or ten weeks, according to the depth of the wound or the completeness of the removal of the gland.

4. Where many glands have to be removed, it is better to remove them through a series of small incisions and thereby avoid very extensive ones.

Considering the subject from a pathological point of view, he holds that all sinuses and suppurating cavities should be thoroughly cleansed by means of scraper and lint, so as to leave a fresh surface free from granulation or decayed or decaying tissue, and that a drainage exit should be maintained until all the deep parts are healed.

It is essential to know and to bear in mind that the visible abscess, which has often been called and treated as a suppurating gland, is frequently but a subcutaneous reservoir of pus, the source of which (a degenerate gland) is not subcutaneous but superficial,—that is, under the deep cervical fascia, and often submuscular, under the sterno-mastoid, the communication between the two being a small opening in the deep fascia just large enough to admit a probe or director. This opening may easily be overlooked, and is not always easily found even when searched for, but it must be found, or the operation will be a failure.

No such abscess should be opened without putting the patient under ether and being prepared for all necessary means of eradicating the diseased gland. If, during the extirpation or evisceration of the gland, the finger detects in the wall of the capsular cavity the slight convex bulging of a contiguous gland, this should be pricked through the wall of the cavity, and so reached and extirpated or eviscerated.

As to caseous glands when a broken-down gland is encountered which is proved to have undergone caseous degeneration, it is safe to infer that any other enlarged glands then present or subsequently appearing are becoming caseous also. Therefore such glands should be removed as soon as the surgeon is convinced that such enlargement is persistent and not transitory, without waiting for evidence of fluctuation or pus.

As to simple glandular enlargement, Teale expresses no opinion in regard to operation. The instruments which have proved of most service to him are the special director devised by himself; Bigelow's dilator, for widening deep sinuses and avoiding the use of the knife in dangerous regions; Lister's scraper, which is a better form of instrument than Volkmann's spoon; a scalpel of proper lancet shape.

In regard to the ultimate effect upon the health, Teale holds that it is possible in most cases to get to the bottom of the trouble in one or two operations; that in most instances disease of the cervical glands, whatever its origin, is practically a local disease and needs to be dealt with by local measures, and that it is but rarely the expression of a general constitutional defect.

W. K. Treves states that he has operated on several hundred cases without a single death. He states that in operating the chief points are to avoid wounding or tearing the affected glands,—to keep, in dissecting, close to the surface of the gland, in order to avoid hemorrhage, and to use transverse incisions. Drainage-tubes are discarded, the wounds being closed and covered in by a pressure bandage.

Godlee, as a routine practice, advises cutting out of the glands in all cases excepting where there is reason to believe that the mischief has extended beyond the limits which can be marked by the knife, and those in which the glands have suppurated and become diffused. In the latter class of cases Volkmann's spoon is employed. He advocates small incisions, and never found it necessary to divide the sterno-mastoid. He prefers a free incision and complete removal. Drainage-tubes are used. He employs a blunt periosteum elevator in digging out glands from inaccessible parts. He has never seen general tuberculosis follow the scraping out of glands, though he has several times seen it follow the use of the instrument in other tuberculous conditions. He never uses a drainage-tube when he can get a clean-cut wound. He has lost no case from operation.

Marsh stated that the cases best suited for the proceeding were those in which glands were of the same size and of long duration, and had not yet suppurated. He advocated a free incision and complete removal. Drainage-tubes were used only when suppuration had occurred and where there was a deep and ramified cavity. Careful dissection is to be preferred to scraping.

Cummins referred to two cases in which extensive operations in the neck and axilla had been followed by acute phthisis. This unfortunate result he believed to be due to opening up of collections of tuberculous material and large blood-vessels during the operation. He believes in early excision of the gland, if possible, even if suppuration and adhesion of the gland to the surrounding tissue has taken place, in preference to the possibly incomplete removal of half-softened tissue by means of the scoop.

Medicinal treatment—*i.e.*, syrup of the iodide of iron—he considers harmful, but has seen benefit follow the prolonged use of the sulphide of calcium.

Thomas advocates the chlorate of potassium in 3- to 10-grain doses, and still more highly arsenic. He records one case in which he divided the sterno-mastoid and then drew up some glands from the thorax. The wound healed favorably, but the patient died fifteen months after from extension of the disease to the bronchial glands.

Milburn cautioned against too early recourse to operation. Removal in some instances, he said, had a good effect; in others it seemed to develop latent diseased conditions. Thus, in one case of constant and intractable corneal ulceration and opacities which had resisted all modes of treatment, removal of a suddenly-enlarged cervical gland was followed by clearing up of all the opacities and restoration of the child to apparently perfect health.

Noble Smith advocated a free opening and closure of the wound without using a drainage-tube. He held that section of the sterno-mastoid is followed by no ill effect.

Black called attention to the necessity of paying proper attention to the mucous membrane of the throat and nose in these cases.

It is worthy of note that in all this discussion no mention has been made of parenchymatous injections and treatment which have in recent years been widely advocated by those most experienced in dealing with the local forms of tuberculosis. Though it is undoubtedly true that early operation and complete removal by the knife offer the best chance of radical cure and with the least resulting deformity, it is, unfortunately, the case that many of these patients never present themselves until the disease has extended so far that complete removal by surgical operation is impracticable. In such cases the parenchymatous injections hold out a fair prospect of cure. Of these, the favorite seems to be a ten-per-cent. iodoform emulsion in glycerin. By means of a hypodermic syringe this mixture should be driven directly into the centre of infiltrated masses. The injection should be made at many points, and particular attention should be paid to forcing the medication into the periphery of the infiltrate. Twenty to 30 minims may be employed at each treatment, and the treatments may be repeated every third or fifth day. There is little danger of toxic symptoms. The ethereal solution of iodoform, at one time warmly advocated, is extremely irritating, causes great pain, and has produced death from iodoform-poisoning in a number of instances. French authors warmly commend solution of chloride of zinc. This is Professor Lannelongue's sclerogenic method; 3 to 4 drops of a 1 to 40 lotion are driven into various points of the enlargement, the injection being repeated at each visit as often as the patient's tolerance of pain allows. This treatment is repeated every seven to ten days, and is finally terminated by injections 1 to 20 in strength.

Kanasz commends essence of cloves dissolved in olive oil in ten-per-cent. solution. When there is pus, this is first withdrawn. The treatment is repeated once in seven days. Indeed, when the subject of parenchymatous injections is considered, there are found so many drugs which are alleged to bring about useful results that it is hard to choose from them.

The internal treatment in these cases should consist in the use of cod-liver oil, iron, and a properly-regulated diet. Medicine administered for the purpose of acting directly upon the enlarged glands seems to be of little avail, though of the drugs used, syrup of the iodide of iron, in doses of 5 to 10 drops three times daily; iodide of potassium, in doses of 5 to 10 drops three times daily; sulphide of calcium, $\frac{1}{12}$ grain, four times a day, are warmly commended. It is worthy of note that in operating upon deep glands which have already softened, drainage is unnecessary, since the ordinary micro-organisms of suppuration are entirely absent, and the inoculation of the pus by nutrient gelatin gives negative results.

THE TREATMENT OF CERTAIN TYPES OF CONJUNCTIVAL HYPERÆMIA.

IN a recent number of the THERAPEUTIC GAZETTE (October 16, 1893) we called attention to certain mild conjunctival inflammations and their local treatment, laying particular stress upon the importance of avoiding active astringents—as alum, sulphate of zinc, and particularly nitrate of silver—in the management of the types then described. When the conjunctival affection assumed a hyperæmic type, abnormal secretion being practically absent, and the congestion largely confined to the bulbar conjunctiva, the local measures recommended were the Kœnigstein douche and washing the eyes frequently with tepid water and Castile soap. It was presupposed that the cause of the hyperæmia, so far as ascertainable, had been removed,—namely, local irritants, lachrymal obstruction, diseases of the naso-pharynx, various states of depraved health, vaso-motor disturbance, and eye-strain in the widest acceptation of the term.

It is the purpose of the present note to call attention to some types of hyperæmia more or

less characteristic of these states of depraved health and vaso-motor disturbance, many of which are associated with a corresponding hyperæmia, irritation, or positive inflammation of the naso-pharynx.

Perhaps the most interesting of these forms of conjunctival hyperæmia, several times referred to in the pages of the GAZETTE, is the one seen with gout, analogous in its manifestations to the "hot eye" described by Mr. Hutchinson,—a condition which will not subside under local treatment, and which presents somewhat the following train of symptoms: well-marked bulbar injection, the posterior conjunctival vessels being distinctly tortuous and filled with darker blood than is normal; practically no abnormal secretion, save perhaps a little frothy mucus at the inner and outer angles; no dread of light, but an annoying sense of heat, amounting sometimes to positive burning, present whether the eyes are used or not, but aggravated during close work. These symptoms are usually worse in the first hour or two of the morning, decrease during the day, but return soon after the evening meal, or in the presence of artificial light. There is nothing characteristic, and the hyperæmia resembles that which might occur from any of its well-known causes, the difference being that under anti-gout treatment, both medicinal and that which regulates the diet, more particularly the latter, the redness disappears. Sometimes the congestion remains, but its most troublesome symptom—the sense of heat—subsides. The practical deduction is the importance of ascertaining the probable relation of gout to any form of hyperæmia that persists in spite of the ordinary treatment. It should be remembered, even in these constitutional types, that all local measures which tend to relieve congestion are indicated, as well as the correction of refractive errors and the removal of naso-pharyngeal irritations.

Mr. Berry, in his excellent text-book, refers to a recurring form of hyperæmia of the conjunctiva, acute in character, which he suggests is due to some vaso-motor disturbance. This interesting type is seen in patients who exhibit abnormal flushings elsewhere in the body,—for example, spots of capillary injection in the face and burning and redness of the ears. Generally the cause resides in some condition dependent, as Mr. Berry says, on the lack of vaso-motor control, or the affection is associated with functional circulatory disturbances,—such, for example, as occur under the influence of the excessive use of tobacco. The plain indication for the treatment is the removal of the cause and the exhibition of vaso-motor tonics, notably the sulphate of strychnine or very large doses of the tincture of nux vomica. Ergot, with or without small doses of the bromides, occasionally acts well. Again, it must be remembered that these constitutional measures do not exclude local means; but when the two are combined, excellent results will usually follow.

Finally, we come to the form of hyperæmia of the conjunctiva, well known to all practitioners of medicine, both special and general, which depends upon torpidity of the liver, or, in general, to disturbances of the function of this organ. This is a characteristic bloodshot, watery eye, utterly rebellious to local treatment, and improving only when the hepatic functions are restored to normal. It is a waste of time to order for these patients collyria of various types, or even glasses, in the hope of relieving the congestion, if its prime cause is not recognized. Regulation of the habits of the patient, especially as to drink and food, calomel, podophyllin, and nitro-muriatic acid, each in its proper place, are often more indicated than antiseptic lotions, douches, and ordinary astringents.

Conjunctival hyperæmia is a troublesome complaint and worthy of thorough investigation, especially as it may be one of the symptoms of a general condition.

"CEREBRINE" AGAIN.

MANY of the readers of the THERAPEUTIC GAZETTE remember that we called attention in the GAZETTE of August 15, 1893, to the character of the preparation known as "cerebrine," introduced into medicine by Dr. William A. Hammond, of Washington. Shortly after there appeared in the *Journal of the American Medical Association* of August 26, 1893, a letter by Professor Brower, of Chicago, accompanied by another from the well-known chemist, Delafontaine, in which good physiological and chemical reasons were advanced for believing that the "cerebrine" obtainable in the market at that time had been sophisticated with no less powerful a remedy than nitroglycerin. About the same time the studies of Dr. Stockwell, of Detroit, also appeared, indicating that the first preparations of "cerebrine" which were placed upon the market by the Columbia Chemical Company, under Dr. Hammond's endorsement, were devoid of this substance, and it is therefore inferable that

sophistication was resorted to both to increase the activity of an otherwise inert substance and at the same time to produce this fortification by means of a substance which was not readily detected upon analysis. Since then a number of reports from other physicians have appeared, the consensus of opinion being that "cerebrine" in itself was unworthy of consideration by the medical profession as a remedy.

Finally, we have just received a letter on the subject written by Professor Albert B. Prescott, of the University of Michigan, at Ann Arbor, who is so well known to physicians and pharmacists through his work on the Committee of Revision of the United States Pharmacopœia, and to chemists because of his high rank in his chosen profession, which will be found under the head of "Correspondence."

It seems evident, therefore, that the position which we took in regard to the nature of this preparation last August was correct, and that the theoretical deductions naturally made at that time have been confirmed by the most competent of investigators. Fortunately, the facts were discovered ere the profession in general suffered from its too ready belief in the therapeutic recommendations of the originator of this now widely and popularly advertised product. This warning has forced the placing of the substance on the general market, it being widely advertised in the daily papers and recommended for popular use in association with Dr. Hammond's name, as may be seen from the following clipping from the New York *Sun* of March 27, 1894:

THE ANIMAL EXTRACTS

Prepared according to the formula of

DR. WM. A. HAMMOND,

In his laboratory at Washington, D. C.

CEREBRINE, from the brain, for diseases of the brain and nervous system.

MEDULLINE, from the spinal cord, for diseases of the cord. (Locomotor-Ataxia, etc.)

CARDINE, from the heart, for diseases of the heart.

TESTINE, from the testes, for diseases of the testes. (Atrophy of the organs, sterility, etc.)

OVARINE, from the ovaries, for diseases of the ovaries.

MUSCULINE, thyrodine, etc.

Dose, Five Drops. Price (2 drachms), $2.50.

The physiological effects produced by a single dose of **Cerebrine** are acceleration of the pulse with feeling of fulness and distention in the head, exhilaration of spirits, increased urinary excretion, augmentation of the expulsive force of the bladder and peristaltic action of the intestines, increase in muscular strength and endurance, increased power of vision in elderly people, and increased appetite and digestive power.

Where local druggists are not supplied with the Hammond Animal Extracts they will be mailed, together with all existing literature on the subject, on receipt of price, by

THE COLUMBIA CHEMICAL CO.,
Washington, D. C.

For sale by J. Milhau's Son, 183 Broadway; wholesale, John H. Francis, 83 John St.

*THE TREATMENT OF SYPHILIS BY HYPODERMIC INJECTIONS.**

AS many of the readers of the THERAPEUTIC GAZETTE are aware, the subject of this editorial has been warmly discussed by syphilographers in this country and abroad during the past few years. Perhaps the most able summary of the treatment of this wide-spread disease by this means is that which can be found in a recent article on syphilis by Dr. R. W. Taylor, in the "System of Therapeutics;" but we notice that, although his paper was in many respects decisive, that wide differences of opinion still exist in regard to the value and indications governing the use of injections of mercury in specific disease.

During the past year a spirited discussion as to the advantages of these mercurial injections took place between Dr. Lawrence Wolff, who favored them, and Dr. J. William White, who opposed them, at a meeting of the Philadelphia County Medical Society. The conclusions arrived at by Dr. White were published in the THERAPEUTIC GAZETTE. Although at first glance White's views seem to be distinctly opposed to the use of the hypodermic injections, in reality we believe that to a great extent the ground taken therein is more moderate and correct.

It is the history of matters medical that all methods of treatment which are new are heralded with a blast of trumpets, which in many cases ends in a very feeble note of praise when sufficient experience has been accumulated by a number of observers to reach correct conclusions as to their value. We believe that the proper attitude for the general practitioner to assume in regard to the treatment of syphilis is about as follows: namely, that hypodermic injections of mercury are not to be resorted to if they can be avoided, or, to express it differently, unless strong indications for their use are present.

There are two recent instances in which methods of treatment have been strongly urged, and in which a sufficient time has elapsed to permit these methods to find their proper level. The antipyretic drugs, about

* Since this leading article was written the two valuable papers on this topic, published in this issue of the GAZETTE, by Dr. Wolff and Dr. Horwitz, were received. The leading article is published as written as a short, third contribution to the subject, written independently of these papers. The paper found in our original columns is Dr. Wolff's second contribution to the subject, not the one referred to in the editorial.

which there was such a furore some years ago, are now only resorted to when other means for reducing fever cannot be utilized. They have been found to fall short of the great things that they promised when first introduced, and they have risen above the position accorded to them by practitioners with pessimistic views, who declared them absolutely useless. Similarly, we now know that hypodermic injections of quinine are never to be employed unless the condition of the stomach and rectum prevent the administration of the drug by the ordinary channels, or unless the malarial poison is acting so strongly as to demand the administration of quinine by every possible avenue of entrance into the body. We believe that the ultimate conclusion of the profession in regard to the hypodermic injection of mercurials in syphilis will certainly be identical with that governing their use of quinine in malarial fever. There can be no doubt that a certain number of instances do arise in which, by reason of severe infection, susceptibility of the patient, or inability to take mercury by the ordinary means, hypodermic injections are absolutely necessary. In the same way that we give quinine by the mouth, the rectum, and hypodermically in pernicious malarial fever, so do we give mercury by the mouth, by inunctions, by sublimation, and by the hypodermic needle in malignant syphilis. Our reasons for believing that hypodermic injections of mercurials are not to be resorted to as a routine treatment of syphilis are several. In the first place, all forms of hypodermic medication possess disadvantages not possessed by the use of drugs by the mouth. There is always some danger of entering a vein, of producing an abscess, or of causing local pain. When mercurials are so employed, the danger of abscess, of pain, or of milder inflammatory manifestations is greatly increased, and the presence of an indurated spot where the hypodermic injection has been given proves that it is not the simplest form of medication in syphilis.

Of the mercurial preparations which are best administered hypodermically in syphilis, the two which surpass all others are undoubtedly the bichloride of mercury, in the dose of $\frac{1}{10}$ grain, dissolved in 10 or 15 drops of distilled water, every second or third day, or gray oil, or oleum cinerium, which was first introduced into medicine by Lang, of Vienna.

In all cases the injection should be given deeply and in some portion of the body in which the tissues are loose, as the buttock or the broad of the back. Gray oil, it will be remembered, is prepared as follows: two drachms of lanolin is rubbed up with enough chloroform to emulsify it. The rubbing process is continued until most of the chloroform is evaporated, and while the mixture is still in a fluid state, metallic mercury in double the amount of lanolin—four drachms—is added and the trituration continued. By this means an ointment of mercury is left which equals 2 parts of mercury and 1 of lanolin. This is sometimes called strong gray ointment. For hypodermic injection, 3 parts of this gray ointment are added to 1 part of olive oil, or it may be still further diluted by adding olive oil in the proportion of half and half. Of this mixture 10 to 20 minims may be injected every second or third day.

Reports on Therapeutic Progress.

GUAIACOL AS A TOPICAL APPLICATION IN THE TREATMENT OF ACUTE TONSILLITIS.

RAYMOND (*Medical Record*, March 24, 1894), as the result of experience, found that the application of guaiacol is somewhat unpleasant and is attended with quite a little smarting, but as its duration is only from one to five minutes in most cases (although in some instances it lasted for several hours), the relief caused by the application more than overbalanced the pain. However, it is frequently no more painful than nitrate of silver or many other remedies commonly used, and possesses many advantages over them, the cardinal one being as a curative measure or as an abortifacient. It was thought that a thorough application of cocaine (ten-per-cent. solution) prior to the application of guaiacol would lessen the degree of smarting, but it seemed to aggravate it. The applications were made by means of a cotton swab dipped into pure guaiacol, and applied over the surface of the tonsils, care being taken to prevent it from getting into the larynx. To keep the throat moistened, troches of althea, or guaiac, or gargles were given. In every case where marked febrile symptoms were noted, the temperature was found to drop from one degree to normal within a few hours. In one case where it registered 103.5° F., it fell to normal in four hours.

In the superficial or lacunar variety the inflammation was terminated far more speedily than in the phlegmonous.

In a number of cases with a history of having had quinsy, and where every evidence of a re-

current attack was present, it was found that not more than two applications were necessary to abort the disease, and in many instances it did not last more than forty-eight hours, and in none did suppuration occur. In many cases where patients were unable to swallow without intense pain, they were able to do so within ten minutes. In a few patients suffering from a primary attack, swelling was seen to subside within a few hours.

THE VALUE OF GUAIACOL AS AN ANTIPYRETIC.

THAYER, of Baltimore, contributes a valuable therapeutic summary on this topic to the *Medical News* of March 31, 1894, and concludes from the few experiments which he has made, and from a consideration of the results obtained by other observers, that we are perhaps justified in asserting that guaiacol applied to the skin is readily absorbed into the economy; that its application is followed in most instances of fever by a gradual reduction in temperature, which reaches its lowest point generally between three and four hours after the application; that this fall of temperature is almost always associated with disagreeably profuse sweating; at a variable period, usually a short time after the lowest point is reached, the temperature rises rapidly, generally in association with marked chilly sensations, if not with an actual chill; that a dose of more than 2 cubic centimetres is rarely advisable; that exactly similar results are produced by the absorption of guaiacol through any other channel (the rectum or the subcutaneous tissues); that the antipyretic action is exactly similar to that which has been previously observed to follow a corresponding use of creosote and carbolic acid; that, owing to the disagreeable effects of the immediate application of guaiacol (sweating and chilliness) and the weakening effects of the continued use, its employment as an antipyretic, as in the case of carbolic acid and creosote, will probably have but a limited application.

THE TREATMENT OF PREGNANCY COMPLICATED BY HEART-DISEASE.

SEARS (*Boston Medical and Surgical Journal*, March 15, 1894), in a paper with the above title, reaches the following conclusions:

1. That many women with valvular disease, even when it is situated at the mitral orifice, pass through repeated pregnancies without the development of serious symptoms, and at times without suspecting that they are victims of such disease.

2. That miscarriages are very frequent, and the chances of the child's surviving more than a few years are doubtful. If the mother's condition during pregnancy has been serious, the probable fate of the child should take much more prominence in deciding the question of abortion.

3. That the necessity of inducing abortion is very apparent if grave symptoms have appeared during the early months or are present with an advancing lesion, or if there is a history of extreme danger in the preceding pregnancy.

4. That if the necessity for an abortion becomes apparent, the sooner it is done the better, while the fœtus is still small and the expulsive force chiefly furnished by the uterus.

5. That the hope that relief may be given when the case has become desperate by inducing abortion is delusive, as it is possible that it only increases the danger.

6. That marriage should be forbidden, except perhaps in very unusual cases, to women suffering from cardiac disease.

DEATH UNDER ETHYL BROMIDE.

KOCHLER (*Centralbl. f. Chir.*, No 2, 1894) reports an instance of death during the administration of ethyl bromide. The patient, a weak, though otherwise apparently healthy, woman, aged twenty-one, was about to be submitted to an operation for rectal fistula. The anæsthetic was given in small quantities with a mask. After a very transient and mild stage of excitement the heart's action suddenly ceased. The breathing continued for about half an hour, but, notwithstanding galvanism of the phrenic nerves, subcutaneous injections of ether, and injections of saline solution into the median basilic vein, the patient never rallied. There can be no doubt, the author thinks, that the fatal result in this case was due to cardiac paralysis. The air-passages remained quite free, and breathing persisted for some time after the cessation of the cardiac movements. There was no indication of any respiratory disturbance. The phrenic nerves ceased to react to the electric current between four and five minutes after the arrest of the heart's action. The anæsthetic, on careful examination, was found to be pure. Ethyl bromide, it is held, cannot be regarded as an absolutely safe anæsthetic. No fewer than five cases have been recorded in which death was the result of a careful administration of a pure preparation

of ethyl bromide. The result of the necropsy in the author's case confirmed the suspicions that had been suggested by the very sudden arrest of the circulation. The left side of the heart was contracted and empty, and the walls collapsed. The muscular structure showed signs of extreme fatty degeneration, being speckled and studded with white patches. The surface of the heart was covered with a thick layer of fat, extensions of which could be traced in the very thin muscular walls of the ventricles.—*British Medical Journal*, March 10, 1894.

HYPODERMIC INJECTIONS OF THIOSINAMIN VALUELESS IN TUBERCULOSIS OF LARYNX AND LUNGS.

SENDZIAK concludes a paper on this subject as follows:

Thiosinamin, subcutaneously applied, has in certain cases a positive influence upon the course of the tubercular process in the larynx.

Upon the tubercular process of the lungs thiosinamin seems not to have any positive influence.

Also upon the general condition in most cases this drug does not act satisfactorily.

In lupus of the nose, thiosinamin, like tuberculin, may, Hebra asserts, be applied with comparatively great advantage.

This drug seems not to produce general reaction, which, as is known, was the weak point of Koch's remedy; but it must be applied with certain precautions in tuberculosis of the lungs and larynx.

Finally, after making the above observations, the author arrived at the conviction that the results obtained by him with thiosinamin, subcutaneously applied, in tubercular diseases of the larynx and lungs, were not very encouraging, which disheartened him from further experiments with this drug.

In his opinion, thiosinamin, so warmly recommended by Hebra in laryngeal and pulmonary tuberculosis, will share the same lot as its antecedents, Koch's tuberculin, Klebs's tuberculocidin, and Liebreich's cantharidinate of potassium,—*i.e.*, it will be lost in oblivion.

Agreeing with Hebra as to the appearance of local reaction in lupus, obtained by thiosinamin, Spiegler, in another paper, affirms that he did not discover any distinct therapeutic effects of this drug in this disease, and he was obliged to return to his former local treatment.—*Journal of Laryngology, Rhinology, and Otology*, March, 1894.

BENEFICIAL RESULTS OF SALICYLATE OF SODIUM IN INFANTILE TETANUS.

DRS. SOTOLONGO and LYNCH describe a case of tetanus in its initial state, occurring in a baby nine days old, and which in all probability arose through infection at the umbilicus. The mother was delivered by an ignorant midwife, and, as a result, suppuration at the umbilicus followed. The wound was treated with bichloride of mercury, iodoform, and antiseptic dressings, while internally the hydrate of chloral and the bromides were administered. The trismus was so pronounced that the child's mouth could hardly be forced open, and its food and medicine were given drop by drop. The improvement was hardly perceptible, and, fearing a fatal issue, the author decided to try the salicylate of sodium. Accordingly, 20 centigrammes (4 grains) were given in two portions after the first dose; the father gave the second powder at the end of the third hour. On the following day a notable improvement was perceptible, and the drug was continued. The baby made a complete recovery.—*Journal of Nervous and Mental Diseases*, March, 1894.

SULPHUR IN DIPHTHERIA.

BÄUMLER, of Freiburg, has for years employed sulphur in diphtheria. He was first induced to try it by the recommendation given to this local treatment by Professor von Liebermeister, in his lectures on special pathology and therapeutics, where he says, "As a local application, I generally use powdering with crude sublimed sulphur, by abundantly applying with a thick, soft camel's-hair brush the dry powder to the diseased mucous membrane. This powdering of the pharynx with sulphur is, according to circumstances, repeated every hour or every two hours, or only three or four times a day." On the strength of several years' experience, the writer entirely concurs with Professor Liebermeister's further remarks,—"I have the impression that by this treatment, when commenced early, I attain more than by any other which I had tried before, and that with these applications the cases, on an average, take a considerably more favorable course than without it." Bäumler has repeatedly seen cases, in which gangrene of the uvula and part of the soft palate seemed unavoidable, take a favorable turn in a few days, the membranes becoming detached and the swelling going down, leaving much less loss of substance behind than was to be feared when first seeing

the case. With less extensive disease we could frequently notice the first effects of the application to consist in a somewhat increased injection (not congestion) of the mucous membrane on the borders of the exudation, the latter becoming more sharply defined at its edges after a few applications, and then beginning to get loose and be detached.

In the majority of fresh cases of diphtheritic sore throat, as well as of lacunar tonsillitis, two or three applications a day seemed sufficient, the patients in the mean time, when able, gargling with a weak solution of permanganate of potassium, and being subjected to such general treatment as the case required (cool baths or the wet sheet, or occasionally a dose of antipyrin when there was high pyrexia, and great care as to feeding by mouth, or, if necessary, by the rectum).

How the sulphur acts in these cases the writer is unable to say, and mentions that there seems to be no particular difference in the action of sublimed or precipitated sulphur. We are not aware that as yet any experiments have been made with regard to the action of sulphur on the particular bacteria which cause diphtheritic and other kinds of sore throats (Loeffler's bacilli and streptococcus chiefly). But while anxious for the scientific explanation of the facts so frequently observed, we need not delay making the experience gained more generally useful.

The action of this remedy being a merely local one, its principal field of usefulness will be in diphtheria of the fauces, where it can be applied directly and abundantly. The larynx also, and in certain cases the upper part of the trachea, may be reached by using a curved insufflator for blowing in the powder. But no effect can, of course, be expected when the disease extends into the bronchial tubes, or when the general blood-poisoning has gone beyond a certain degree, nor even locally, where extensive sloughing has already taken place in the throat, and when, in consequence thereof, rectal feeding is the only, and then mostly insufficient, means to prevent exhaustion.

The author is unable to say whether remedies which have more recently been recommended, such as pyoktanin or the peroxide of hydrogen, which has found such warm supporters in America, give even better results than the sulphur, as, especially in severe cases, he did not feel justified in foregoing the benefits of a remedy whose efficacy he had had ample personal experience of.—*British Medical Journal*, March 3, 1894.

MALAKINE: A NEW ANTISEPTIC.

According to the *Journal de Médecine de Paris* for February 25, 1894, this substance results from the combination of salicylic aldehyde and paraphenetidine, and occurs in small, needle-like crystals of a clear yellow color, which are insoluble in water. As a result of his experiments, JACQUET, of Basel, finds that the drug produces a reduction of temperature, which, unlike that produced by antipyrin and acetanilide, comes on gradually. He found that in typhoid fever and in the fever of tuberculosis the drug exerts its best influence. After the administration of 15 grains the temperature began to fall in from one and a half to two hours after ingestion, and reached its full fall four to six hours afterwards. A repetition of the dose is followed by an increase of effect.

A NEW ANTINEURALGIC.

Under the name neurodine, the chemical name of which is acetyl-para-oxyphenylurethane, the *Journal de Médecine de Paris* states that this compound is useful for the relief of neuralgia, and that Von Mering recommends it in the dose of 15 to 20 grains as a succedaneum to phenacetine in painful affections of the head. The pain disappears in about half an hour after the drug is taken. The drug acts equally as an antipyretic, reducing the temperature from two to three degrees in the dose of 7 or 8 grains. The effect, however, is rapid, and is apt to be followed by cyanosis and sweating. It is best given in cachets.

ARSENIC AND CANCER.

Among the ingenious and plausible suggestions emanating from MR. JONATHAN HUTCHINSON is the possibility of the evolution of epithelioma being facilitated by a long course of arsenic. In his well-known paper on the subject he alleged a number of instances in which there was certainly presumptive evidence of arsenic having thus favored the evolution of the cancerous outbreak. At a recent meeting of the Clinical Society *apropos* of a case of multiple epithelioma following a course of arsenic, he called attention to certain peculiar changes in the skin of the palms and soles which, in his opinion, indicate that it is time to desist from the administration of the drug,—viz., a furfuraceous thickening of the skin in those situations. We call attention to this statement in order that our readers may avail themselves of any and every opportunity of ascertaining how far the

suggestion is confirmed by clinical observation. —*Medical Press and Circular*, February 21, 1894.

THE EXTERNAL USE OF GUAIACOL.

In *La Province Médicale* for February 3 there is an article on this subject, of which the following is the substance: This drug, which was used by Sciolla and Bard, has for some time been employed as an antithermic. It consists in painting the greater part of the exterior wall of the thorax, and sometimes the forearms, with pure guaiacol. According to different authors, the doses are variable, ranging from 1 to 2 cubic centimetres up to 7 or 8. There is a difference of opinion as to the employment of this liquid. Sciolla, Bard, and other physicians use pure guaiacol, while others, like Desplats, mix it with glycerin or alcohol. In several cases of advanced phthisis a marked reduction of two degrees has been obtained by painting the entire surface of the front of the thorax with pure guaiacol. Unfortunately, the effects of this treatment are only temporary, not lasting more than three or four days. Sometimes, also, applications of this kind produce a marked rise in temperature,—in one case of two degrees. It is necessary, then, in making use of this procedure to ascertain the susceptibility of the patient, and to use at first small and then progressively large doses. There have been of late years interesting attempts in the employment of this procedure. Casasovici and Miron Sigalea have used guaiacol mixed with tincture of iodine, in the treatment of pleurisy, in the following proportion: Tincture of iodine, 385 grains; guaiacol, 75 grains. This quantity is used in a single application, and the diseased parts are thoroughly and extensively painted with it every night. These applications cause a considerable reduction of temperature, profuse perspiration, and an increased flow of urine, followed soon after by complete resorption. These results seem to have been obtained, particularly in one case, where there was abundant pleuritic effusion on the left side, in which tapping had not been followed by any relief, but had caused a considerable rise in temperature, by the application of iodized guaiacol, the fever disappearing in a few days and the effusion becoming resorbed.

M. Desplats has recently conceived the idea of applying guaiacol in the treatment of painful rheumatic inflammation of the joints, after having observed a case in which applications of guaiacol had been used with excellent results. He has used a mixture of equal parts of guaiacol and pure glycerin. The joints were thoroughly painted with this mixture and afterwards covered with a dry dressing. In one case of acute rheumatism and in three others of arthritis deformans with sharp pains the results were excellent. The pain was completely subdued, and in the first case the patient recovered rapidly. This procedure has recently been employed in applying guaiacol for articular neuralgia of the shoulder, which was very painful, in a tuberculous patient, who experienced marked relief. It is easily employed, and not dangerous if the indications mentioned are conformed to.—*New York Medical Journal*, March 3, 1894.

THE ABORTIVE TREATMENT OF QUINSY.

In the February number of the *Annales des Maladies de l' Oreille, du Larynx, du Nez, et du Pharynx* there is an abstract of an article by M. Liégeois, published in the *Revue de Clinique et de Thérapeutique*. The author states that he has succeeded in aborting an attack of quinsy between the fourth and sixth days in six cases by means of combined local and general treatment. At the outset he cauterizes the tonsil once by painting it with a solution of 1 part of zinc chloride in 20 parts of glycerin. The eschar separates in forty-eight hours. After the cauterization, a drachm of salol is to be taken in the course of twelve hours. The salol acts as an intestinal antiseptic, an antipyretic, and an analgesic. [This treatment certainly is heroic and the dose of salol dangerously large.—ED.]—*New York Medical Journal*, March 3, 1894.

NOTES ON THE PHYSIOLOGICAL ACTION OF OZONE PREPARATIONS.

In the *Medical Record* of March 3, 1894, DR. THOMPSON, of New York, contributes an interesting article on this subject. The conclusions at which he arrives respecting the effect of ozonizing agents when given by the stomach or injected directly into the intestine or the blood, after a series of carefully carried out laboratory experiments, are as follows:

1. When injected in the circulation in full strength—*i.e.*, fifteen volumes per cent.—they have a very destructive action upon the blood, thereby ultimately having the effect of reducing rather than of oxidizing agents for the tissues.

2. Acting through the stomach or intestine, they may similarly affect the blood, and in addition they destroy the gastric and intestinal mucous membrane.

3. Given in medicinal doses by the stomach,

their only benefit, if any, consists purely in their local action in the alimentary canal, in possibly preventing abnormal fermentations.

4. If so used, care should be exercised, owing to the great variability in strength of different preparations.

5. Ozone is of no real value to the tissues, whether inhaled or drunk in fluid preparations, and it may be exceedingly harmful.

[These results are of interest in view of the fact that many manufacturers of nostrums purporting to contain ozone claim that these substances give off oxygen or ozone to the body when taken internally. Most of these claims are equivalent in value, as proved by Dr. Thompson, to the claims of the manufacturers of electric belts.—ED.]

THE USE OF DIGITALIS IN CHILDREN.

COMBY contributes an article on this topic to *La Médecine Moderne* for February 17, 1894. He points out that digitalis, in the eye of the laity and of the medical profession, is a remedy *par excellence* for maladies of the heart, and finds its chief application in the treatment of cardiac insufficiency. The other remedies which can be considered as adjuvants to digitalis in these circumstances are caffeine, sparteine, kola, and strophanthus. Of the indications and contra-indications governing the dosage and prescription of digitalis to children he speaks as follows:

Children are exceedingly susceptible to the action of this drug. There are several indications, nevertheless, for its employment. First, in those diseases of the heart in which there is insufficiency and cardiac feebleness, either congenital or acquired, or in those instances in which the action of the heart is too rapid or irregular. The drug under these circumstances acts as a tonic to the heart, as quinine does to the general system. Naturally, it does best in mitral insufficiency and least well in aortic regurgitation. It is indicated in those cases where compensatory hypertrophy is lacking. He thinks it is also of value in acute endo- and pericarditis. Secondly, digitalis is indicated in certain disorders of the respiratory apparatus, as, for example, pleurisy and hydrothorax, where it favors absorption of the exudate by its diuretic influence. In pneumonia it tends to reduce temperature, and it is claimed to have a slight jugulating power.

Simon believes that digitalis is of value in the treatment of irritability of the heart, and also that because of its steadying influence over the circulation it may be employed with advantage in hæmoptysis.

As to whether digitalis is of value in renal troubles in children, Comby thinks that during the acute stages of the malady digitalis should not be employed and a milk diet solely resorted to. On the other hand, in chronic renal disease with passive congestion, with or without anasarca, the employment of digitalis is a measure often of advantage and without danger. Should there, however, be hypertrophy of the left ventricle, digitalis is contra-indicated. In acute infectious diseases digitalis is indicated only in the presence of complications involving the organs already named. It should also be remembered that it possesses some antipyretic influence. In the treatment of disease of the nervous system, through its sedative influence, digitalis is believed to be of value in epilepsy and in mania, the dose under these circumstances being as much as 30 drops of the tincture to a child of fourteen years. In regard to the prescription of digitalis, Comby directs as follows:

℞ Powdered digitalis leaves, gr. ii;
Distilled water, ʒxii;
Syrup, ʒxii.

Make an infusion, and administer a teaspoonful to a dessertspoonful every two hours to a child of ten years.

Or, for a child of the same age:

℞ Powdered digitalis, gr. i;
Extract of digitalis, gr. i;
Excipient and glycerin, a sufficient quantity.

Make into one pill, and administer such a pill three times a day.

[This is certainly a very large dose of digitalis, even for an adult.—ED.]

RESEARCHES REGARDING HYDROGEN PEROXIDE SOLUTION.

SQUIBB publishes (*Ephemeris*, January, 1894) an elaborate account of experiments performed with hydrogen peroxide solution, with a view to ascertaining the best mode of preparation and to determine its keeping qualities.

It was found by these experiments that at ordinary temperatures and with ordinary agitation the dioxide in the solution is likely to be all practically decomposed in about eight weeks' time. Pressure exerted no discoverable influence on this change. Weak bottles may burst if securely corked, but the packing bottle of ordinary strength is able to withstand all the pressure developed from its contents.

The author endeavored to find a preservative

agent, but was unsuccessful. Boroglycerin retarded decomposition, but would not prevent it. When protected with this agent and kept at a low temperature, the solution lost only about one-fifth of its strength in eight months, but decomposition then became more rapid, and the preparation was practically worthless at the end of the year.

The result of these experiments is the recommendation of the extemporaneous preparation of the solution as required for medicinal use. Any solution, new or old, should be assayed near the time of its use to determine its actual strength.

Such preparations and directions for assay are now provided by the Pharmacopœia, presumably as the result of the investigations named.

Several other important facts were brought out during this investigation, one of which is that the solution, when exposed to the air at the ordinary temperature, or when heated (on a water-bath) to a temperature not exceeding 140° F., loses chiefly water, and it can thus be concentrated so as to contain fifty volumes of the dioxide. When rapidly heated, the solution is liable to sudden decomposition (so only small quantities should be experimented on, the heat being carefully applied and regulated). Decomposition is accelerated by the presence of angular particles of dust. Thenard long ago succeeded in concentrating the solution *in vacuo*. It was first observed by Squibb, however, that the solution left in an open vessel became stronger instead of weaker, mention being made of this in a communication to the Kings County (New York) Medical Association in 1892.

It was further found that the solution may be partially concentrated by freezing; the ice being removed, abstracts only water.

Tests for impurities and assay to determine strength are detailed in the paper referred to; but these are now provided also by the Pharmacopœia.—*Druggist's Circular and Chemical Gazette*, March, 1894.

INCOMPATIBILITY OF PHOSPHATE OF SODIUM AND ALKALOIDS.

A note appears in *L'Union Pharmaceutique*, by M. Christiaens, on the incompatibility of these bodies. Having had occasion to prepare some medicines containing (*a*) quinine, or coca wine and sodium phosphate, (*b*) tincture of nux vomica and sodium phosphate, and similar prescriptions, he noticed a more or less rapidly forming precipitate. At first he was content to merely filter it before sending it out, but having afterwards to dispense phosphate of sodium and phosphate of strychnine in distilled water for hypodermic injection, a fairly heavy precipitate of needle-like crystals appeared at once. The precipitate turned out to be strychnine. Phosphate of sodium precipitates the alkaloids, and unless neutralized completely with phosphoric acid, is incompatible with these bodies. M. Christiaens generalizes as follows: All salts whose reaction to litmus is alkaline, whatever be their chemical function, precipitate the alkaloids from their salts.—*Druggist's Circular and Chemical Gazette*, March, 1894.

ANTIDOTE TO POTASSIUM CYANIDE.

J. Kossa (*Vratch*), considering that potassium permanganate ought, theoretically, to act as a chemical antidote to potassium cyanide, has performed some experiments, the results of which appear to fully justify his hypothesis. Rabbits were shown to be fatally affected in a few minutes by .01 gramme of the poison, but if, at the time of administration, .5 gramme of permanganate dissolved in fifty cubic centimetres of water was also introduced into the stomach, doses of cyanide up to .1 gramme failed to cause death. Larger quantities (.2 gramme) proved fatal under similar conditions, but the action of the poison was much delayed. Successful experiments were also performed with aqueous solutions of hydrocyanic acid containing .1 per cent. It is suggested, therefore, that in cases of cyanide-poisoning one-half to one-third litre of a three- to five-per-cent. solution of permanganate be administered immediately.—*Druggist's Circular and Chemical Gazette*, March, 1894.

TREATMENT OF MIGRAINE.

Dr. H. Gradle contributes a useful paper to the *Medical News* of March 3, 1894, on this topic. After discussing the cure of the condition by the relief of ocular defects, he says of drugs, that he knows of none that will cure migraine except cannabis indica. According to his experience, from one-fourth to one-third of all patients are permanently benefited by its use. This applies equally to cases without a peripheral source of irritation, as well as those with eye-strain, who for some reason or other would not wear glasses. Seguin, who first popularized the use of Indian hemp in this disorder, advised its continued administration in every case, and claimed more or less complete relief in about one-half of his observations after several months' treatment.

When Gradle began the study of cannabis indica, about twelve years ago, many preparations in the market were inert. His first experience showed that in certain patients cannabis indica aborts each attack of migraine. If the first dose does not give complete relief, he gives another in six hours in slightly larger quantity. When moderate doses fail entirely, larger ones answer no better purpose. Very severe attacks are sometimes only relieved, but not entirely aborted.

Whenever hemp influences the individual attack, its continued use twice daily will usually protect the patients against the recurrence of the spells, and if persisted in for months, will cure many, but not all, of the cases. He does not believe it will prove of service in those cases in which it does not alleviate the pain at the time.

Other drugs recommended in the text-books for the cure of migraine, such as iron, strychnine, arsenic, and phosphide of zinc, he has used but little and invariably with negative results.

If the individual attack does not yield to cannabis indica, it can be stopped almost invariably by antipyrin. Acetanilide and phenacetin are not as universally successful as antipyrin. Guarana has in former times more often failed than proved satisfactory in his practice. Bromides do not stop the attacks, although they may relieve the discomfort. Chloral aborts migraine only when it induces sleep in patients whose headache will yield to sleep. Morphine has no effect at all upon the attack. It only dulls the pain while its action lasts.

THE TREATMENT OF LUPUS BY SALICYLIC COLLOID.

SYMPSON has published a short article on this subject in the *Practitioner* of February, 1894. For nearly five years he has used salicylic colloid in the treatment of lupus vulgaris affecting the skin. It is so safe and so easily applied by unskilled persons, it causes so little pain comparatively, and the chances of its destroying the affected area of skin are so great, that this form is to be preferred to any other, such as the plaster mull or the salicylic plaster.

The formula is as follows:

℞ Acid. salicyl., ʒi;
Ext. cannabis ind., gr. x;
Collodii flexilia, q. s. ad fʒi.

Much in the same way in which it acts on warts and corns (in which, however, the horny layer of the epidermis is equally predominant with the elongated and enlarged papillæ) it acts on lupus. Under its influence ulcerating patches dry up, tubercles disappear, and the resulting cutaneous tissue is much more flexible and natural in appearance than is generally the case in lupus.

One patient of the author's has used it for four years, the salicylic colloid keeping the disease in check. Indeed, this virtue of checking the return or advance of lupus is one of the chief reasons for bringing the subject before the readers of this journal. He knows of nothing that will *cure* lupus; often cases improve for a time and then progress no further. After scraping, for instance, and touching up with the cautery, great improvement may immediately ensue; but it is quite probable that there will be another outbreak at no distant period.

With salicylic colloid, however, the disease can be diminished and held back with ease. The constant need to repeat the application is of very small account compared with the dread of an operation. In one case he scraped thoroughly one side of a face with well-marked lupus and painted the other with the colloid. Unmistakably the side painted got better quicker than the side scraped. Where the area to be painted is large, a little can be done every day, insuring that each part of the diseased surface shall be painted about twice a week.

SALICYLATE OF SODIUM IN HEADACHE.

In the February, 1894, number of the *Practitioner*, LAUDER BRUNTON writes an interesting article on headache, in the course of which he points out that one very common form of headache commences in this way. The patient sometimes feels a little unwonted irritability at night, but this irritability is not always present. It is very often the precursor of a headache. He awakes in the morning about four, five, or six, with a feeling of weight in the head, but not a headache. He is very drowsy, disinclined to rise, and is apt to turn over and go to sleep again almost at once. If he does this, he awakes again about seven or eight with a distinct but not severe headache, usually frontal or temporal. As the day goes on the headache becomes worse and worse, until in the afternoon or evening it becomes almost unbearable. It then finishes up with sickness, after which the patient becomes easier, but feels much exhausted. A headache of this sort may frequently be prevented by the patient taking a mixture of bromide of potassium and salicylate of sodium overnight, or by getting up and taking

it when he awakes with a heaviness in the early morning, instead of turning over and going to sleep again. The quantity necessarily varies with different individuals and with the severity of the headache, but 30 or 35 grains of bromide of potassium with 5 to 15 grains of salicylate of sodium, in half a tumblerful of water, may be looked upon as an average dose. If the patient feels the irritability indicative of the approaching headache overnight, or if he should have the excessive brightness which is the precursor of headache in others, he should take this dose at bedtime, and will very probably awake without the headache. If, in spite of it, he should awake with a heaviness in his head between four and six, he should repeat the dose, or should take it for the first time if no indication of headache has been felt the night before, but the heaviness has come on during sleep. He will then probably turn round, fall asleep again, and awake without the headache. If, however, there should be either heaviness or headache on awakening about 7 A.M., a third dose should be taken. The writer has tried the bromide and the salicylate separately, but he does not think they act nearly so well as when taken in combination. Ten days before writing the present article the writer received a letter from a physician who was suffering from a very severe headache after influenza. He had tried antipyrin, which had relieved it for the time, but had to be continued every twenty-four hours. He had also tried chloride of ammonium and bromide of ammonium with the same result. He was advised to try 20 grains of salicylate of sodium with 40 of bromide of potassium in half a tumblerful of water, and after four doses of the mixture the pain subsided.

PRESCRIPTIONS.

Application for chronic pharyngitis:

℞ Iodi., gr. vi;
Potassii iodidi, gr. xii;
Mentholis, ʒi;
Glycerini, q. s. ad ℥i. M.

Apply with a camel's-hair brush twice or thrice daily.

Useful in bronchitic asthma:

℞ Potassii iodidi, ʒii;
Ammon. carb., ʒi;
Tinct. lobeliæ, fʒii;
Sp. chloroformi, fʒiv;
Vin. ipecac., fʒi;
Infus. senegæ, q. s. ad f℥vi. M.

A tablespoonful in a wineglassful of water every four hours.

Incontinence of urine:

℞ Tincturæ belladonnæ,
Tincturæ cubebæ, of each, fʒii;
Tincturæ nucis vomicæ,
Tincturæ rhois aromaticæ, of each, fʒi;
Tincturæ cascarillæ, fʒii.

12 drops at bedtime for a child from seven to ten years.

The removal of warts:

℞ Hydrarg. bichlor., gr. v;
Acid. salicyl., ʒi;
Collodion, f℥i. M.

This is applied every day, the upper crust of the previous application being removed before a fresh one is made. Usually after four applications the wart becomes so softened that gentle friction will remove it painlessly. If a further dressing is required, a five-per-cent. salicylic-lanolin ointment is all that is necessary.

Ozæna.—Dr. Stein obtains in ozæna most remarkable results from painting the nasal fossæ with a solution of trichloracetic acid. The painting is done by means of a piece of cotton-wool steeped in a solution (one-tenth per cent.) and fixed on the point of a flexible wire. The operation is done three times daily for the first few days and then once a day. The strength of the solution is gradually increased.

Asthma.—The following will be found most useful in this distressing complaint:

℞ Chloralis,
Potassii iodidi, of each, ʒss;
Syrup of oranges, fʒvi;
Water, f℥vi.

2 to 5 tablespoonfuls a day.

—*Medical Press and Circular*, February 21, 1894.

THE TREATMENT OF PERITONITIS.

During the last few weeks, MR. FREDERICK TREVES, of London, has delivered a series of valuable lectures on peritonitis, which have appeared in part in the *Medical Press and Circular*. They form the best statement of facts about the disease that we know of. Part of his last lecture was devoted to treatment, and every word of it seems so useful to the practising doctor that we reproduce it for our readers, lest, in an attempt to condense it, its value be lost.

In considering the treatment of any grave affection, it is well to recollect that certain of the so-called symptoms of a disease are not gross evidences of a disturbing evil within the

body, but are rather the natural expression on the part of the organism of an attempt to rid itself of a trouble. Many symptoms are, in fact, curative acts, and are the measures of a natural treatment and not the mere purposeless signs of an unnatural disturbance.

In peritonitis, the exhaustion, the rigidity of the belly-wall, the pain, the vomiting, and the not infrequent sense that the bowel needs to be emptied of flatus, would suggest the recommendation of absolute rest, of attempts to relieve pain, of starvation, and, under certain circumstances, of means to relieve the intestine. If, in contemplating a patient with peritonitis, one could regard his more conspicuous symptoms as natural attempts to afford relief, they would appear to be in the direction of securing quiet within the inclosure of the abdomen, and of effecting an evacuation of the alimentary canal.

In the account which follows of the treatment of peritonitis, this suggestion from the therapeutics of nature is not disregarded.

1. Rest.—Absolute rest in the recumbent position appears to be the first obvious indication. The knees may be flexed over a pillow to lessen the tension on the abdominal walls and to favor the patient's instinct to assume that posture. The upper part of the chest and the ever-restless upper limbs should be protected by a woollen jacket, and no reasonable restraint offered to the patient's inclination to hold the hands above the head. This favorite posture, by acting upon the lower parts of the thoracic wall, assists also in diminishing the tension within the abdomen. It is cruel to insist that the hands should be kept beneath the bedclothes. The state of misery in peritonitis is acute enough without being increased by purposeless and rigid formulæ. Cold hands do not cause death, but as on exposure they tend to become cold, they should be covered up. The wretchedness of restlessness has a natural relief in little movements.

2. Feeding.—The old rule of eighty years ago of giving as little food as possible by the mouth cannot be improved upon. The stomach is not in a condition to receive nourishment, and what is taken usually remains unutilized and is returned unchanged. The practice sometimes met with of laboriously plying the patient with teaspoonfuls of this or that meat extract recalls the legend of the Daaides, who spent their energies in pouring water into pitchers without bottoms.

In the matter of feeding there are two extremes to be avoided. The first is the rigid, unreasoning, and often needlessly cruel prohibition of any kind of food by the mouth; and the second is the reckless and intemperate use of ice or iced fluids.

Thirst is often a most terrible symptom in peritonitis. It is not always quite relieved—at first, at least—by rectal injections. The patient is ready to give his life for a drop of cold water. If he takes it, he is sick, but he is much relieved. This little indulgence does not introduce anew the symptoms of vomiting. It is there, but it is latent, and the drop of cold water only makes it evident. The patient will not die of vomiting, and simply because a rigid exclusion of all fluid by the mouth does not render the symptom apparent, it does not render it non-existing. The man would sooner vomit than endure this thirst. Very often great relief is given by allowing a fairly copious draught of fluid, which is soon rejected, and which—as it were, by washing out the stomach—leaves the patient for a while infinitely comforted. On the other hand, the perpetual sucking of ice is as bad as the perpetual teaspoonful of useless jelly of decomposible meat-juice. The filling of the stomach with iced water does undoubtedly add to the general depression of the patient, especially when vomiting has been brought into abeyance by morphine.

The right course appears to lie between these two extremes. There should be no rigid formula except this: let the patient take as little food as possible by the mouth. If there be a raging thirst, let him have a little ice,—and very little suffices,—or a little iced milk and soda-water; or if, as is common, the inclination lies to something warm, let him take a few teaspoonfuls of hot water or of weak tea made hot, or of beef-tea at a like temperature. It is not the nourishment that is needed, but some fluid in the stomach.

It is better, within reasonable limits, to be guided by the patient's own instincts than by a blind formula founded upon a doubtful physiology.

3. Opium.—Here, again, the old practice appears to be the best. Give as little opium as possible. In the early stages of acute peritonitis, and especially in the perforative forms and in those depending upon appendix troubles, morphine, in the form of a hypodermic, is absolutely necessary. In the worst instances, it may certainly avert death from shock. Under its influence the patient revives and the more intense symptoms become greatly modified. Morphine should never become a feature in the routine care of peritonitis: it masks the symptoms, hinders the natural process of cure, and hampers treatment. The indication for it

is actual pain, and not mere restlessness and misery. In the really septic forms but very little morphine is called for, and often none at all. Its evil effect in the after-treatment of cases of abdominal section has been amply demonstrated. In quite hopeless cases there can be no objection to its freer employment, but in other instances the administration and the dose of the drug must be sanctioned and measured by the one symptom,—pain.

4. Aperients.—At the commencement of the century the use of aperients was a necessary element in the routine treatment of peritonitis. By aperient treatment may be understood the obtaining of an action of the bowels by either drugs or enemata. After a certain number of years the practice altered, and the dictum went forth that when any signs of peritonitis were present, aperients were to be absolutely forbidden.

Within the last few years the more ancient method has been revived, but it has been revived with very radical modifications. To Mr. Lawson Tait the profession is indebted for this return to an almost forgotten practice, and, above all, for the employment of that practice with the new element of discrimination. Mr. Tait's measure has been frequently spoken of as "the treatment of peritonitis by aperients," and it has been assumed by some—and probably with disaster—that a purgative is necessary in every case of peritoneal inflammation. Mr. Tait's precise words on this subject are as follows: "I have never said that the purgative treatment will cure peritonitis, for peritonitis, once it is completely established, is a practically incurable disease and almost uniformly fatal."

It is on this very point that the centre of the position with regard to this treatment turns. Aperients can never be adopted in the routine treatment of peritonitis. In the larger proportion of cases this measure is entirely useless, and in the great series of the septic forms it is more or less impracticable.

It is a fact that the most successful treatment of acute obstruction of a certain grade is that which provides for a thorough evacuation of the loaded gut. A blindly-executed enterostomy, with an utter ignoring of the cause of the obstruction, has been attended by better results than have operations in which the agent of the obstruction has been discovered after elaborate search, and has been satisfactorily dealt with. This treatment of acute obstruction by the evacuation of the bowel before all things we owe to Benjamin Travers, the father of intestinal surgery. In cases of strangulation of a certain degree he insisted that the bowel should be cut into and emptied, even after the obstructing band has been removed. He considered that the operation was not complete until this had been done. He urged that safety was only to be obtained by an evacuation of the gut, and he supported his views by numerous cases and experiments.

Another illustration of these self-same points is afforded by perityphlitis. In a previous section of these lectures it was shown that those cases of perityphlitis in which there is diarrhœa, or in which the bowels act naturally or under the influence of aperients, are attended with a much lower mortality than are the cases in which constipation is marked. The writer is convinced from his experience of the value of the aperient treatment in the earliest stages of these cases, and of the pursuit of the same measure throughout in selected instances. In some cases, however, nothing within reason will bring about an action of the bowels. When once general peritonitis has established itself, an aperient is without avail.

5. Bloodletting.—This measure of treatment may with advantage be more extensively employed. It is no longer likely to be used in the unreasoning and mechanical fashion of bygone days. In robust forms of localized peritonitis, bloodletting is attended with admirable results. In perityphlitis the application of half a dozen leeches often acts with magical effect. In the older accounts of the treatment of peritonitis by bleeding, no good appears to have followed in cases in which the inflammation was diffused, except, perhaps, in some examples due to injury. On theoretical grounds this is precisely what would be expected.

6. Operative Measures.—These are represented by incision and drainage, with or without irrigation. This treatment must be considered, as it applies to peritonitis, under two entirely different aspects. In one series of cases there is vigorous, well-defined inflammation, the local symptoms are marked, pus is produced and may be considerable in amount, and the exudation is more or less clearly localized. In the other series of cases the peritonitis is diffused, the constitutional symptoms are more prominent than the local ones, the changes in the serous membrane—so far as evidence of inflammation is concerned—are comparatively slight, and are out of proportion to the general disturbance.

In the first series of cases surgical interference by incision and drainage ranks with the procedure of evacuating a large abscess.

In the second series the cut into the ab-

domen and the subsequent flushing out or drainage are to be compared with the washing out of the stomach after an active poison has been swallowed.

The operative treatment of suppurative peritonitis, especially when the effusion is localized, has been remarkably successful. Records of the operation extend back into the eighteenth century, and all that modern surgery can lay claim to is the application of the treatment with greater boldness, with greater frequency, and with infinitely less delay.

The operative treatment of general diffused non-tuberculous peritonitis has so far no record to boast of and little progress to chronicle. It is doubtful whether a single human life has been saved by surgical interference in a genuine case of peritoneal toxæmia. Surgical treatment has been most discouraging in acute peritonitis following upon gangrenous hernia, upon operation, and upon puerperal infection. It has met with but little better results in cases of perforation in which the serous inflammation has been well established.

As to the actual mode of operating adapted for the different varieties of peritonitis, attention should be drawn to the following points. In all cases it is to be assumed that the skin over the operation area is cleansed and prepared in a suitable way, and that the surgeon adopts those measures which students in their examination papers are so fond of describing as "strict antiseptic precautions."

In cases of localized purulent peritonitis an incision should be made into the collection by the most direct route. When the pus has escaped, a rubber drainage-tube of suitable size and with stiff fenestrated walls should be passed to the bottom of the cavity. A dressing of some absorbent material, such as Tillmann's papers, sal alembroth, or cyanide gauze, is then applied. No advantage follows fuller evacuation of the pus by squeezing or the immediate irrigation of the cavity, and distinct harm may be done by scraping the wall of the inclosure, by persistent searching for a diseased appendix or other cause of the trouble, and by stuffing the exposed space with a considerable quantity of gauze.

At the end of twenty-four or thirty-six hours the irrigation of the cavity may be commenced and continued twice daily, and now and then a little iodoform emulsion may be introduced.

In some examples of perityphlitis a well-encapsulated collection of pus is not exposed, but the knife enters into an ill-defined district containing a variable quantity of thin, greenish, and often offensive matter, which appears to saturate the tissues. In such circumstances a drain composed of strips of iodoform gauze, which are carefully introduced into the lowest accessible recesses of the region, is of advantage.

In cases of generalized peritonitis the procedure adopted must obviously depend upon the cause and degree of the trouble. If the exudation be serous, it will suffice if the fluid be evacuated, if the peritoneal cavity be gently dried in its most dependent parts by means of gauze sponges, and if the abdomen be closed without drainage.

When the exudation is sero-purulent, it is in many cases desirable that the cavity be irrigated. The fluid which appears to be best suited for this purpose is a .6-per-cent. salt solution made warm. After the washing, the depths of the peritoneal cavity are dried, so far as is possible, with sponges, iodoform powder is very freely dusted over the portion of the serous membrane most involved, a long, rubber, fenestrated drainage-tube is introduced, and the abdominal wound is closed. Any treatment directed against the cause of the peritonitis will be independent of these measures.

There are cases in which the peritonitis is more plastic in character. The intestines are found to be matted together with grayish lymph, which may be present in considerable quantity. The breaking down of these adhesions causes no little amount of bleeding, and such a step is evidently destructive of a certain desirable process of repair. Still, in order to search for the cause of the peritonitis, assuming such search to be indicated, and to set free an amount of exudation which is imprisoned between the attached coils, this freeing of adhesions must be to a certain very limited extent carried out. There will probably be a sero-purulent exudation in the belly cavity, and the gentlest movements of the fingers among the recently attached intestines will set free more fluid, which will be probably less opaque. A clump of adherent intestines will often cover and protect a perforation, and the ubiquitous fingers will many times close such an opening with more speed and security than are provided by any system of suturing.

As the surgeon, therefore, reaches what appears to be the starting-point of the peritonitis, he must proceed with the utmost caution, and be not only prepared, but rather inclined, to leave the actual *fons et origo mali* undemonstrated. The main purpose of the operation is to allow a noxious exudation to escape, and, if

possible, to free the peritoneum of the cause of its trouble. In the class of cases now under discussion, a perforation will be very often the starting-point of the peritonitis; the lapse of time and the plastic character of the inflammation afford evidence that the perforation is, for the time being, closed. If the operator can rid the serous cavity of the effects of the perforation, he may often leave the breach itself to be dealt with by natural means. The wisdom of doing no more than is necessary, or as little as is obvious, is well illustrated by these cases.

Irrigation.—Mere blood is better removed from the peritoneal cavity by sponging than by irrigation. If the operation area be well circumscribed by sponges, if the shoulders be raised so that blood will reach the more dependent tracts, and if a sponge be introduced into the pelvis at an early stage of the procedure, there is little trouble with blood-clot. Coagulated blood is certainly very much more easily and certainly removed by means of gauze sponges than by a stream of water. The same observations apply to what may be termed healthy cyst contents, to fluid from hydatids, to bile, and to matter escaping from the stomach or intestine. With careful plugging and a watchful use of sponges a wide-spread extravasation is uncommon. If it does take place, the gauze can usually reach it. Irrigation would possibly have the effect of spreading the noxious fluid—as, for example, intestinal matters—over a still wider area. It may be said, therefore, that if certain precautions be taken, the cleansing of the peritoneal sac may be best and most safely accomplished by dry sponging.

If there be a considerable outpouring of such a material as putrid pus, or if there be a copious escape of gut contents, as from the giving way of a distended bowel above a point of obstruction, then it may be better that the whole peritoneal cavity be irrigated. In such a case the extravasated fluid and its wide distribution would render its complete removal by sponging difficult.

This irrigation is best conducted by the following means. The fluid used is a sterile .6-per-cent. salt solution at blood-heat. It is introduced at low pressure, but in a wide stream. The irrigating-tube is of soft rubber and may have a diameter of three-fourths of an inch. The tube itself is introduced into the belly cavity. The flow through it can be regulated by a clip. Any form of rigid nozzle is to be most strongly condemned. The solution should flow gently into the abdomen. The peritoneal cavity is to be flooded and not to be scoured out with a violent stream of water, which hisses and rushes from a vulcanite nozzle as from a miniature fire-hose.

When the belly cavity is quite full of fluid, the surgeon's hand—which is already in position—is moved to and fro among the intestines with great gentleness. The coils of bowel are thus rinsed. By a movement of the hand and by pressure here and there, the fluid overflows from the wound and is replaced by the steady stream.

As the water which escapes becomes clear, the upper end of the operation-table is raised, so that the shoulders are much elevated, and then little has to be done but to wash out the most dependent parts, including especially the pelvis, and to allow the upper parts to drain. Finally, what fluid remains in the pelvis is removed with sponges, and a sponge in a holder is retained in the bottom of the pelvis during the introduction of the stitches, and only withdrawn at the last moment.

Drainage.—It will be allowed by most that drainage is necessary when either an actually noxious material is left in the peritoneal cavity or when it is assumed that an extensive effusion will follow upon the laparotomy. Considerable differences of opinion must exist as to what constitutes, either in substance or in amount, a noxious material, and also to what extent a possible effusion is to be met by drainage.

A stout rubber drainage-tube of large size and well fenestrated, passed into the midst of the area which is the most disturbed, appears in most cases to answer all reasonable purposes. It is not suited for most tuberculous cases. It must be assumed that the surgeon has no objection after the operation to frequent and perhaps extensive changes in the patient's position for the purpose of assisting the process of drainage. The author has seen no harm arise from a liberal fulfilment of this object. In certain instances, some of which have been indicated, a gauze drain appears to be better adapted for the case than a rubber one. This drain is simply composed of a long strand of iodoform gauze about one and a half inches wide and some five to six layers thick. It appears to have been first advocated by Bardenheuer. In a case of purulent peritonitis, Jalaguier has passed these strands of gauze in all directions among the intestinal coils from the diaphragm to the pelvis with good result.

A like proceeding in like cases is advocated by Steinthal.

The great objections to the iodoform drains are these: They may induce symptoms of poisoning if very extensively employed, they are most difficult to remove unless there be a free

discharge, and their use is apt to be followed by ventral hernia.

Some surgeons, either to supplement or to replace drainage, allow the wound to gape, or support it merely by a few quite loose sutures. This measure has been especially advocated in the treatment of perforative purulent peritonitis.

In conclusion, it only remains to be said that the surgical treatment of peritonitis has not yet reached a position which is either satisfactory or secure. There has been no lack of boldness in the measures used and little sense of discouragement at the results obtained. Surgical enterprise has been directed against effects and against damage done, rather than against causes and the beginnings of evil. The surgeon holds the same position in regard to peritonitis which was held some thirty years ago in regard to wounds and more accessible forms of inflammation. At that time he dealt only with the consequences of pathological wrongdoing, just as now he concerns himself with the prevention of troubles which he has learned to control. Peritonitis will be more successfully treated when measures can be directed against the sowing of the wind rather than, as now, against the curbing of the whirlwind.

THE TREATMENT OF BRONCHITIS.

In *La Tribune Médicale* for February 1, 1894, there is an article upon the treatment of bronchitis and tracheitis. In the treatment of the latter, rest is required in a room of moderate temperature, hot drinks are to be given with small doses of syrup of tolu and mild alcoholic stimulation. In addition, every two or three hours, two teaspoonfuls of the following mixture may be used:

℞ Tincture of aconite, gtt. xxx;
Syrup of narceine, ℥i;
Cherry-laurel water, ℥iv;
Peppermint-water, ℥iii.

At the same time it is well to paint the chest about the area of the episternal notch with tincture of iodine.

In the treatment of acute bronchitis in the early stages, when there is hyperæmia and fever with cough without expectoration, first rest in bed with sweating, the administration of hot drinks which may contain alcoholic stimulants, the application over the chest of mild counter-irritants. For the stage in which expectoration is just beginning and fever is still present, kermes mineral, grains seven, and syrup, four ounces, a teaspoonful every two or three hours. At night, for the relief of cough, small doses of chloral and morphine in simple syrup, which are placed in milk at the moment of taking, may be administered. For the treatment of chronic bronchitis it is well to employ a teaspoonful of cod-liver oil with creosote, and to administer after each meal a mixture composed of,—

℞ Arsenate of sodium, gr. i;
Iodide of sodium, ℥ii;
Water, ℥viii.
Tablespoonful three times a day.

Or,

℞ Terpine,
Eucalyptol, of each, gr. iii.
To be placed in a capsule and taken three times a day.

From a hygienic point of view, the patient suffering from chronic bronchitis should sponge the body every morning with warm water and alcohol, and afterwards use vigorous friction of the skin. He should abstain from tobacco. Should the chronic bronchitis be fetid, it is wise to use every two hours the following solution by inhalation:

℞ Eucalyptol, ℥i;
Ninety-per-cent. alcohol, ℥iii;
Water, ℥vi.

Place this in an inhaler and draw in the air impregnated with the vapor of the medicament. At the same time the following pill may be administered:

℞ Creosote,
Terpine,
Iodoform, of each, gr. i.
Take this pill three times a day.

TREATMENT OF APOPLEXY.

In *L'Union Médicale* for March 3, 1894, is an article in which the following advice is given. At the time of the attack there should be applied counter-irritation, in the form of mustard sinapisms to the lower extremities, and should the face be flushed and the arterial pressure high, and the patient robust, copious venesection to the amount of a pint should be resorted to. Should these conditions not exist, and there be evidence of very great arterial sclerosis, the physician may have to be content with the withdrawal of a small quantity of blood in the neighborhood of the mastoid. At the same time it is well to administer a laxative injection, which may be composed of fluid extract of senna, sulphate of sodium, and water, in the proportion of one drachm of fluid extract of senna, six drachms of the sulphate of sodium,

and enough water to make a pint. The efficacy of this injection may be increased by the addition of oil or glycerin. Should the respiratory function become disordered and the Cheyne-Stokes phenomenon appear, hypodermic injections of caffeine, ether, or camphorated oil should be employed. For the purpose of preventing future attacks or the first attack, it is suggested that patients who have atheromatous vessels should take moderate exercise each day, should rest after eating, and only take those articles of diet which are easily digested. The following mixture may also be administered:

℞ Iodide of potassium, ʒiii;
Bromide of potassium, ʒiii;
Distilled water, ℥iv.
1 or 2 tablespoonfuls each day in milk.

Should there be indications that the cerebral trouble depends upon syphilis for its existence, a mixed treatment must be actively employed. Mercurial inunctions should be resorted to daily, using from 1 to 2 drachms of mercurial ointment each time. The iodide of potassium may be given in the dose of 1 or 2 drachms a day, divided doses, given in milk.

THE ACTION OF DUBOISINE UPON THE NUTRITIVE PROCESSES.

In a further study of the action of duboisine as a therapeutic agent, E. MARANDON DE MONTYEL (*Bull. de Thérapeutique*, February 28, 1894) publishes the details of twenty-five cases of mental disease in which the drug was employed. According to the results obtained, duboisine, though possessing good hypnotic and excellent sedative virtues, exercises untoward effects, such as *habit*, gastro-intestinal disturbances, cardiac weakness, and malassimilation. The author formulates the following conclusions:

1. Duboisine has undoubtedly exercised on the subjects observed an action manifested in a faulty nutrition.

2. This deleterious action on nutrition has been produced independently of the gastro intestinal troubles that the drug may cause; because, when given after meals, in the majority of cases, especially upon those cases of general paralysis and lypemaniacs, the administration of the drug, notwithstanding the integrity of the digestive tube, has been followed by the same deleterious action upon nutrition.

3. This action, other things being equal, is aggravated by disorders of digestion; but it occurs in those subjects that have never suffered from such troubles as well as in those who are victims of gastro-intestinal affections, a proof that the action is independent of these disturbances.

4. This malassimilation under the action of duboisine seems to occur in connection with other disturbances, such as slowness of the circulation, and particularly a rise of the bodily temperature.

5. It is absolutely necessary, in order to combat this deleterious action of duboisine upon nutrition, to associate the drug with a tonic reconstructive *régime*. The medicament, therefore, should be given with caution to patients of feeble constitution, especially in those diseases characterized by decided nutritive deterioration, and in all these cases the employment of the remedy should not be prolonged.

6. General paralytics are the ones who suffer the least and the most from this peculiar action of duboisine; they furnish the greatest number of those that escape the action; and yet, on the other hand, of all demented patients those suffering from disorders of nutrition are the ones to exhibit the greatest loss of bodily weight.

7. All lypemaniacs, without exception, are susceptible to malassimilation from the action of duboisine, and this malassimilation, even after the administration of the drug has been suspended, continues and becomes more difficult to combat than in the case of general paralytics or those suffering from simple dementia. Therefore, although the loss of weight is not as decided as in cases of general paralysis, it may be said that the action of duboisine upon nutrition is manifested more particularly in cases of lypemania, and to a minimum degree in cases of simple mania.

8. In the large majority of cases the suspension of the drug is the beginning of a return of the patients to their original bodily weight, but, notwithstanding this, the mental excitement returns, placing the patients in much less favorable conditions. All this seems to prove that the deleterious changes produced in the nutritive processes have been the result of the action of the drug.

9. The subcutaneous injection of duboisine, even in doses of 4 milligrammes, and continued for a long time, never causes local troubles, neither in general paralytics nor in vesanic patients; quite large amounts of duboisine have been administered in a certain number of epileptics.

ERGOT IN THE TREATMENT OF PERIODIC NEURALGIA.

DR. THOMSON, of New York, reports in the *Medical Record* of March 17, 1894, four cases

of very severe periodic neuralgia in which the administration of ergot was followed by the most pleasing results after ordinary anti-neuralgic remedies had failed. He administers the fluid extract of ergot combined with an equal quantity of the elixir of cinchona, the latter ingredient being added to prevent nausea. Two teaspoonfuls of this mixture are to be taken in water as soon as the premonitory symptoms of headache are noticed, and the patient is directed to lie down and keep very quiet. If no relief follows in an hour, another dose may be given, and in another hour still another dose. Should the patient vomit the drug, it may be given as a rectal injection in two ounces of water. Careful attention to the condition of the alimentary canal is necessary between the attacks.

BROMIDE OF ETHYL AND CHLOROFORM NARCOSIS.

PROFESSOR PAWLOFF, in discussing the narcosis resulting from bromide of ethyl and chloroform, reached the following conclusions:

1. The narcosis comes on in a relatively shorter time,—about two minutes,—and the patient does not pass through a stage of excitation.

2. It requires a very small amount of bromide of ethyl—about five grammes—to bring about full anæsthesia.

3. The narcosis is not attended by any disagreeable manifestations.

4. A small amount of chloroform is needed to keep the narcosis up.

5. There follow no bad after-effects.

About 16 grammes of the chloroform is required to keep up the narcosis for fifteen minutes.—*Medical Record*, March 17, 1894.

THE TREATMENT OF URÆMIA.

In the *New York Medical Record* for March 17, 1894, DR. BEVERLY ROBINSON contributes a valuable paper upon this topic, in which he reviews the various therapeutic resources for the combating of this condition.

After mentioning the value of cardiac stimulants, of diaphoretics, and of the external application of heat, he strongly urges the employment of venesection during the presence of convulsions or when they are imminent, and states that these manifestations will sometimes disappear even while the abstraction of blood is going on. In strong, robust patients he suggests the withdrawal of from twelve to twenty ounces of blood. He believes that many lives are saved by this measure, and cites one case in which the most favorable results followed this method of treatment.

The patient, who was found unconscious in the street, and who had a uræmic convulsion on the way to the hospital, was profusely bled to the extent of two pints. Immediately after the bleeding, saline transfusion of two quarts of freshly-made salt solution was performed, using the opening in the vein from which the blood had been drawn. The injection seemed to work like a charm, for no sooner was it terminated than the patient's limbs began to move, his face appeared normal, and twenty minutes after the transfusion the patient was able to speak clearly and to remember events which occurred before his attack. Dr. Robinson therefore believes that, wherever it is possible, copious venesection, followed by intravenous injections of saline solutions, or of hypodermoclysis, should be resorted to, and if these are not possible, that enteroclysis be used. Should the patient be apparently moribund and collapsed, he may require hypodermic stimulation with extract of coca, strychnine, or ether. The preparation of coca which he employs for this purpose is prepared in the following manner: To four ounces of the fluid extract of coca add one ounce of glycerin, heat upon a water-bath until all alcohol has been driven off, and then add sufficient water to make the product measure two fluidounces. For the relief of the convulsions, before venesection can be resorted to, chloroform may be employed. The use of pilocarpine for the production of sweat he regards with suspicion.

In the discussion of Dr. Robinson's paper, Dr. Peabody strongly recommended urethane for the treatment of the convulsions. The drug is to be given by subcutaneous injection, and as it is a harmless remedy and easily absorbed and quite unirritating and painless, he thinks it should be frequently employed. His statement was corroborated by Dr. Kinnicut, who advises that the drug be given in very large doses, amounting to three or four hundred grains in twenty-four hours. Dr. Kinnicut thought that urethane would control almost all forms of convulsions after other remedies had failed.

THE PREVENTION OF CRACKED NIPPLES.

The *Lancet's* Paris correspondent says, "The direct relation of mammary abscess occurring during the period of suckling and excoriations of the nipple is now fully admitted. Many mothers object to suckling their infants on account of the dread of this complication. Artificial feeding with its frequent failures is then

resorted to, and the child suffers. Antiseptic washing of the nipples has greatly diminished the frequency of abscess of the breast, but cracked nipples continue to be of common occurrence. For the last ten years Professor Pinard has been in the habit of advising nurses as a matter of routine to keep the nipples covered with a compress saturated with a solution of boric acid. This precaution has had the effect of markedly diminishing the frequency of lymphangitis, but instances of an increase of temperature in young mothers due to microbian infection of the nipples are still numerous. M. Lepage strongly recommends that the nipples should be regularly washed with the following solution: Red iodide of mercury, 10 to 20 centigrammes (2 to 4 grains); spirit of wine, 50 grammes (1½ ounces); glycerin, 500 grammes (1 pint); distilled water, 450 grammes (1 pint). If, after using this for a few days, the ulceration disappears, substitute a solution of boric acid. Any crack that may develop is covered with tarlatan moistened with the mercuric solution. The following figures appear to confirm M. Lepage's good opinion of the comparative value of his method. In three hundred and thirty-one cases of lying-in women whose breasts were treated by the Pinard method there was an increase of temperature in sixty-seven, the corresponding figures in M. Lepage's cases being twenty-three out of four hundred and forty. Moreover, the healing of the cracks is said to be expedited and the pain greatly diminished by the mercurial treatment."—*New York Medical Journal*, March 17, 1894.

COMPRESSION OF THE PHRENIC NERVE AS A THERAPEUTIC MEASURE.

The *Journal des Praticiens* for February 10 contains a letter from its Marseilles correspondent, in which its readers are reminded that seven or eight years ago Dr. Bidon conceived the idea of assuaging hysterical spasm of the glottis by exerting digital compression on the phrenic nerve between the heads of the sterno-cleido-mastoid muscle. After that, Leloir advised this procedure as a means of checking hiccough. Now, M. Bidon suggests it afresh as a remedy for spasm of the glottis in persons suffering with tabes. The following is a summary of a case thus treated: The patient, a man thirty-eight years old, complained of fulminant pains, incontinence of urine, and muscular weakness, and showed Westphall's and Argyll-Robertson symptoms. Every ten minutes he was attacked with vertigo, weakness in the legs, a half-fainting condition, and a sensation of suffocation. M. Bidon compressed both phrenic nerves with the fingers. The spasm ceased and the difficulty in breathing disappeared, but only provisionally and for a few minutes after the compression. The use of the measure was persevered in, and in eight days the cure was lasting. "How," asks the correspondent, "is this phenomenon to be interpreted? By a paralyzing action on the diaphragm, or by an inhibitory action on the nervous centres in such manner as to suspend spasm of the constrictor muscles of the glottis, or by direct compression of the laryngeal muscles?" He does not attempt to answer the question, but he remarks that the fact is memorable from a clinical point of view.—*New York Medical Journal*, March 17, 1894.

THE DIETETIC TREATMENT OF PHTHISIS.

H. P. Loomis, in the *New York Medical Record* for March 24, 1894, in an article upon this subject, says that he is firmly convinced (as are all physicians, for that matter) that diet is a most important element in the prophylaxis of phthisis, and that therefore the regulation of the diet is a most important part of treatment.

Milk should never be taken in quantities exceeding eight ounces at a time, and then should be swallowed slowly during ten or fifteen minutes. When several quarts are drunk in twenty-four hours, lime-water must be added, in the proportion of a tablespoonful to eight ounces. One of the most palatable ways in which milk can be administered is scalded, with Seltzer-water added. This mixture is especially refreshing in the early morning.

Some patients cannot take milk, either from a personal idiosyncrasy or enfeebled digestive powers. To such persons kumyss or matzoon can be given with great benefit.

Where the digestive powers are especially weak, peptonized milk can often be assimilated in large quantities, but the objection to its prolonged use is, that after a time its taste palls upon the appetite. Two to four quarts should be taken in twenty-four hours. The manner of serving it is not unimportant. To some it is more palatable cold, to others hot. In the majority of cases it should be taken slightly warmed (100° F.).

When the different methods indicated all fail, then attention must be given to the gastro-intestinal mucous membrane. Potations of hot water (aerated in some cases), from half a pint to a pint one hour before meals, must be tried. If this also fails, disinfection of the alimentary

canal is indicated, and for this creosote is one of the best agents we have.

Meat can be given cooked rare, or, better still, when large quantities are to be taken, in the form of squeezed beef-juice. To obtain from the meat the maximum amount of juice, a meat-squeezer is absolutely essential. There are a number of good ones in the market, which range in price from one to three dollars. The best kind of meat from which to squeeze the juice is a thick round steak free from fat. This should be seasoned with pepper and salt, broiled over a brisk fire, then cut in pieces two inches square, and then put into the meat-squeezer. About eight ounces of juice can be obtained from each pound of meat. No heat can be applied to the juice, as the albumin would be at once coagulated and the juice rendered worse than useless. If the juice becomes cold and it is advisable to heat it, this can be best accomplished by placing the cup in hot water. It is necessary to go fully into the preparation of the beef-juice, because of its importance as one of the most essential items in the diet of phthisis. Freshly-squeezed beef-juice is the best of the artificial preparations of meat known, and the trouble of preparing it is well repaid by the marked improvement in the patient. Beef-tea should never be given in phthisis as an article of diet. The popular idea that it is nourishing is erroneous. Another nutritive and palatable method of preparing meat is in the form of scraped meat-balls. The pulp is scraped from a round steak, either by a fork or by a meat-scraper. This leaves the fibrous material behind. The scraped meat is rolled into small balls and broiled over a quick fire, and served hot with pepper and salt or Worcestershire sauce.

Scraped meat may also be given raw, spread between thin layers of bread. To some this is a very appetizing method. Many of the meat-powders on the market prepared specially for feeding furnish us valuable aid. A preparation from which the writer has seen marked benefit is the beef peptonoids; also an excellent meat-powder can be prepared in the kitchen by cutting boiled beef into fine pieces, drying by means of a water-bath, and grinding in a coffee-mill with the teeth set closely. [The editor has found beef meat and beef cacao of great value in these cases.] The method of administering these meat-powders can be varied almost indefinitely. The powders can be added to soups, broths, milk-punch, milk, and may be taken in cold or warm water. The object in preparing the meat in the various ways suggested is to give the largest amount of albuminoids in the smallest compass, in the most palatable form, and in a way that will not disturb the stomach. He has known cases of phthisis to live for months on nothing but milk and meat prepared as above, and gain steadily in flesh and strength.

Next in order to meat and milk as foods come stimulants and cod-liver oil.

It can scarcely be questioned that in consumption alcohol is beneficial. Some attribute to it distinct curative power, and would recommend it in all stages. In the reporter's opinion it is one of those remedies which is capable of doing good, if judiciously used, while at the same time it is quite as liable to do positive harm. It should never be used in the first stage; in the second stage only in small quantities with food, and preferably in the form of milk-punch in the forenoon and on retiring. In the third stage is where it appears to do the most good, when taken in small quantities and repeated at regular intervals. In many cases, in all three stages, a glass of ale or porter twice a day with the meals improves the appetite, aids the assimilation of food, and causes marked increase in weight. For prudential reasons, often it is advisable to disguise the alcohol when given for any length of time. The combination of alcohol with milk, malt, cod-liver oil, or glycerin is theoretically, as practically, more advantageous than its separate ingestion.

It is well known that muscle-fibre is a loose combination of albumin and fat, and that fat is a component factor in all muscular histogenesis. So in phthisis fat is necessary to the building up of health and tissue, and the dietary should be as rich in fat as the assimilative powers of the patient will allow. The greatest evidence of the value of fat in the food of phthisical patients is furnished by the universal confidence placed in cod-liver oil as a curative agent. It is only the best form of fat because it is the most easily assimilated of all, and can frequently be absorbed when no other fat can be. Nature supplies an oil emulsion in milk, and this largely explains its excellent effects. Cream may be used when it is desirable to introduce fat into the system. It has, however, to be given with care, as in many persons it produces dyspeptic symptoms, which may often be obviated by taking it with a little liquor, as maraschino or Chartreuse, or mixed with aerated water, in the proportion of a teaspoonful to a glass.

Albuminoids and carbohydrates should form the basis of the three principal meals. Meat should be eaten rare and with all meals. If the

patient is over thirty years old, a large amount of meat is essential and can be more easily taken. Two pounds of beef, at least, should be eaten in the twenty-four hours, or its equivalent in beef-juice. If poultry is served, the dark meat is preferable to the white. Sweetbreads are often tempting and may assist digestion. Soft-boiled eggs for breakfast are advisable. A raw egg sucked from the shell will often relieve an irritable condition of the pharynx. Butter should be freely used. Cream on cereals, or diluted with Seltzer-water, is of benefit in certain cases.

Milk should constitute the principal drink, and should be ordered between each meal, also a glass or more with the meals. In this way from two to three quarts can be taken in the twenty-four hours. To avoid monotony, the articles of diet, such as vegetables, etc., ordinarily taken with meals, should not be restricted, except that all indigestible articles, as rich pastries and sweets, should be avoided. The starchy and farinaceous foods should be taken sparingly. While the diet is largely nitrogenous, a sufficient proportion of carbohydrates must enter into it.* Fats and oils, especially from the animal kingdom, will furnish this. Butter should be freely used.

Cod-liver oil, which is really not a medicine, but a food, should be taken in ½-ounce doses after each meal; whether directly after the meal or after a half-hour interval must be decided according to the personal idiosyncrasies of the patient. When it is impossible to give the pure oil on account of its taste, or because it causes indigestion or eructation, it is wise to give an emulsion of cod-liver oil, pepsin, and quinine, which can be readily taken by almost any one. Often the pure oil can be taken when floated on whiskey. During its first stage the phosphates are valuable, and it is advisable to give food which, owing to the presence of phosphates, is desirable. However, it must be remembered that to supply the phosphates in sufficient quantities, special preparations must be made use of. The hypophosphites should be given after meals, diluted in water. In certain cases they are even more valuable than cod-liver oil.

Second Stage.—This is the period which will most try the physician's patience, and is the one in which systematic diet is absolutely essential. The relief from coughing, fever, and digestive disturbances experienced by this class of patients in following the dietetic regimen prescribed is of great help to the physician, as a guarantee that his directions will be implicitly followed.

In this stage the diet varies rather in the methods of preparing the food than in the food itself. The patient is still fed six times a day, but the meals are restricted. All foods should be offered in the most palatable form and generally given finely subdivided. This is the stage when beef-juice and scraped beef are specially indicated. A small glass of the former in the middle of the forenoon and afternoon, with a cracker and a scraped meat-ball or raw-meat sandwich for lunch or dinner, will materially aid nutrition. In many cases a glass of porter or ale with lunch or dinner will be of great benefit in increasing appetite and adding flesh.

Milk plain, with lime-water, or boiled should be given early in the morning, at bedtime, and between meals; but this should never be taken at the same time with beef-juice. When milk disagrees with patients, kumyss should be substituted, to the amount of three or four bottles a day. With the exception of the malt liquors with meals, stimulants during this stage are apt to do more harm than good. Cough mixtures should never be taken, if they can possibly be avoided. The syrups and narcotics which they contain are almost certain to produce digestive disturbances, in spite of the most rigid dieting. Cod-liver oil will be required, but the greatest care must be used in its administration. The emulsion spoken of in the first stage will often be assimilated without any trouble. Especially in patients in middle life, the pure oil with whiskey will give the best results. Other cases can take cod-liver oil in capsules.

Some of the most important rules which should govern the dietetic treatment of phthisis may be formulated as follows: 1. Never take cough mixtures if they can possibly be avoided. 2. Food should be taken at least six times in the twenty-four hours; light luncheons between the meals and on retiring. 3. Never eat when suffering from bodily or mental fatigue or nervous excitement. 4. Take a nap or, at least, lie down for twenty minutes before the mid-day and evening meals. 5. The starches and sugars should be avoided, as also all indigestible articles of diet. 6. As far as possible, each meal should consist of articles requiring about the same time to digest. 7. Only eat as much as can be easily and fully digested in the time allowed. 8. As long as possible, systematic exercise should be taken to favor assimilation and excretion; when this is impossible, massage or passive exercise should be undergone. 9. The food must be nicely prepared and daintily served; made inviting in every way. The following may serve as a

sample of a diet-sheet in the early stages of phthisis:

On Awakening.—Eight ounces of equal parts of hot milk and Seltzer, taken slowly through half an hour.

Breakfast.—Oatmeal or cracked wheat, with a little sugar and an abundance of cream, rare steak or loin chops with fat, soft-boiled or poached egg, cream toast, half-pint of milk, small cup of coffee.

Lunch, 10 A.M.—Half-pint or small teacup of squeezed beef-juice with stale bread; 12 M., rest or sleep.

Mid-day Meal, 12.30 P.M.—Fish, broiled or stewed chicken, scraped meat-ball, stale bread and plenty of butter, baked apples and cream, two glasses of milk.

Lunch, 4 P.M.—Bottle of koumyss, raw scraped-beef sandwich or goblet of milk; 5.30 P.M., rest or sleep.

Dinner, 6 P.M.—Substantial meat or fish soup, rare roast beef or mutton, game, slice stale bread, spinach, cauliflower, fresh vegetables in season (sparingly).

NAPHTHOLATE OF SODIUM (MICROCIDINE) AND TRICHLORACETIC ACID IN EAR- AND NOSE-WORK.

In the November number of the *Annales de l' Oreille*, COZZOLINO, of Naples, highly commends the product of the action of sodium hydrate upon β-naphthol, as furnishing one of the most valuable antiseptic and curative medicaments for the control of suppurative processes. It is odorless, unaltered by contact with instruments or tissues, soluble in water in the proportion of one to three, forming a brownish solution when strong, but is alkaline in reaction, and nearly colorless and tasteless in the usual three- to four-per-cent. solution. The powder should be kept from the light, but the solutions demand no precautions. Experience in other medical fields has shown the three-per-cent. solution to be as efficacious as 1 to 2000 sublimate solutions, and in the ear Cozzolino has found it twice as prompt in ending suppuration as boric solutions, using it by irrigation to secure full washing away of all discharge. In the nose he employs it in .5- to two-per-cent. solution or in a weak ointment, and claims brilliant results for it here, as well as in tonsillar troubles.

In another article, Cozzolino warmly commends trichloracetic acid as the best hæmostatic in epistaxis arising, as such bleedings usually do, from the cartilaginous septum. He employs generally a pledget of cotton soaked with one-per-cent. or 1.5-per-cent. solution, and claims slight reaction and prompt cicatrization as the result, far surpassing that following chromic acid or iron preparations.

TREATMENT OF CONJUNCTIVITIS.

SCHWEINITZ (*Philadelphia Polyclinic*, April 7, 1894) thinks that in the treatment of acute and subacute simple conjunctivitis the following points should receive attention:

1. Removal of the probable cause.

2. Protection of the eyes with dark glasses or a shade, but *never the application of a poultice.*

3. Exposure of the surfaces which are inflamed by eversion of the lids and bringing into prominence the retrotarsal folds, and spraying the affected areas with a mild antiseptic solution, preferably boric acid and common table salt.

4. The application of nitrate of silver in the usual manner once a day, if there is much secretion. If there is not much secretion or swelling, and the inflammation becomes subacute and tends to be stubborn, the use of an astringent, such as alum, or tannin and glycerin, and of a collyrium of biborate of sodium, instead of boric acid.

5. The frequent washing of the lids and surrounding areas with warm water and Castile soap.

6. The administration of the internal medication which is indicated, particularly quinine, which has a good effect in checking the disease.

Associated inflammation in the naso-pharynx or surrounding facial area—as, for example, eczema, impetigo, and similar conditions—necessarily requires attention and treatment, and the relation of refractive anomalies to the disease should always be determined.

THE TREATMENT OF BLEPHARITIS MARGINALIS BY HYDROGEN DIOXIDE.

S. C. AYRES (*Medical News*) strongly recommends the use of hydrogen dioxide in the treatment of blepharitis. The method of application is as follows:

The larger crusts should first be removed or scraped off, after having been softened by tepid water. Then a little cotton is wrapped tightly around a Japanese toothpick, which is dipped into the dioxide in a little dish. The cotton is then swept over the entire edge of the lid. The characteristic bubbling will follow, and the application is repeated until the bubbling ceases. The ulcers will then present a whitish

appearance. If care is taken, and the cotton is not too freely saturated, none will come in contact with the conjunctiva. In order to obviate all pain, a few drops of a four-per-cent. solution of cocaine can first be instilled into the eye. This treatment should be repeated every day. The remedy is one that any intelligent person can apply at home, and one from which there is no danger. Dr. Ayres's experience with the use of salves and ointments is somewhat disappointing. They often cause unaccountable irritation, and on this account are unreliable. In the method advised a clean remedy is used, which acts promptly and efficiently. By its chemic action it destroys the germs which cling so closely to the edges of the lids. It is not a cure-all or a specific, but he certainly has had the happiest results from its use.

THE VALUE OF HOMATROPINE AND COCAINE DISKS AS SUBSTITUTES FOR ATROPINE, DUBOISINE, AND HYOSCINE.

CASEY WOOD (*Ophthalmic Record*, March, 1894), as the result of additional experiments, reaches the following conclusions, some of which are modifications of the propositions contained in his first research on this subject:

1. If two gelatin disks, containing $\frac{1}{80}$ grain each of homatropine and cocaine, be placed in the conjunctival sac at an interval of twenty minutes, *the eye being all the while kept closed*, the ciliary muscle will in most instances be found to be fully paralyzed in from seventy to one hundred minutes after the introduction of the first disk.

2. In persons under twenty-five years of age, or whenever ciliary spasm is suspected, the best results are obtained by the use in another twenty minutes of a third disk, or one containing $\frac{1}{25}$ grain of homatropine alone, the examination in that case being best made between ninety and one hundred and twenty minutes after using the disk. The first two disks containing cocaine are sufficient to furnish the chief advantage which, in his opinion, resides in that alkaloid,—namely, of increasing the absorbing powers of the cornea for agents combined with it, while the increased dose of homatropine produces a more thorough relaxation of the ciliary muscles.

An eserine disk ($\frac{1}{1000}$ grain) inserted the following morning will enable the patient to do near work within an hour or two.

3. The disks should be inserted on the tip of a damp camel's-hair brush, and should always be applied to the ocular conjunctiva at its inferior and outer surface, the patient looking up and in, while the lower lid is drawn down. Any adherent or sticky gelatin may be easily wiped off the palpebral edges with a damp cloth or a piece of wet absorbent cotton.

PRACTICAL POINTS IN TREATING DISEASES OF THE EYE, EAR, NOSE, AND THROAT.

J. WALTER PARK (*Journal of the American Medical Association*, April 7, 1894) calls attention to the importance of attending to the nasal lesions in phlyctenular keratitis, believing that if the eyes alone are treated and the nose is neglected, there will be persistent relapse.

He entertains a most favorable view of the removal of the ossicles and tympanic membrane for chronic suppuration of the middle ear, believing that when there are no mastoid complications, eight out of every ten cases of from six months' to three years' standing, that have resisted all other forms of treatment, recover if the operation is properly performed. In all acute and chronic suppurating ears pyoktanin is recommended, as it will often arrest the discharge quicker than boric acid, if it is always used in fresh solutions, not over three to five days old. Park employs it in 1 to 500 strength, and believes it has a more lasting effect in the destruction of pus-germs than peroxide of hydrogen.

In the treatment of nasal troubles he recommends fluid petroleum, combined with various antiseptics, as an excellent medicament to prevent crust-formations, believing that the fluid petroleum is better adapted for the mucous membrane of the nose than albolene or benzoinol.

THE TYMPANIC COMPLICATIONS OF CHILDREN'S DISEASES.

A valuable communication is made by RASCH, of Copenhagen, in *Hospitals-Tidende*, Nos. 18 and 20, 1893, of the results of sixty-one autopsies of children under two years of age. In but five cases was the tympanum normal, suppurative disease being present on one or both sides in forty-six, equalling seventy-five per cent., and catarrhal lesions in eight cases, or fourteen per cent. Nearly all of the children who had died of broncho-pneumonia showed otitis, and in thirty-three of the forty-three in which the secretion was rigidly examined the pneumococcus was present. Not a few of these children had shown symptoms leading to a diagnosis of meningitis, which was found absent on sec-

tion, and the tympanic inflammation had been generally overlooked. Perforation of the drum-head was found but four times, and even when this occurs, the condition is too frequently unrecognized or slighted.

This is only a confirmation of what has been long urged and repeatedly demonstrated by otologists, but they too often are merely regarded as magnifying their office unreasonably. Numbers of such cases recover from the general disorder without recognition of the middle-ear disease, and give no evidence for a time that resolution has not been complete there; but the otologist finds a really normal drum-head a rarity, and must frequently trace later-coming deafness to such beginnings. This is the more deplorable when measures as simple as hot douching of the ear will often suffice to cure the disease in its early controllable stage; and a careful use of the Politzer inflation has at times instantly dispelled the symptoms of meningeal involvement, which delay might have made organic and irremediable.

TRICHLORACETIC ACID AS AN IDEAL CAUTERANT.

The January, 1894, *Monatsschrift für Ohrenheilkunde* contains an enthusiastic paper by Von Stein, of Moscow, in furtherance of his primary claims for this medicament. Some of the advantages urged can hardly be claimed for anything else, and the methods seem to deserve full trial. Admitting that it is more painful than chromic acid and less vigorous than galvano-cautery, he differentiates the non-fibrous hypertrophies as the true field for its use as a cauterant; but claims, as the result of clinical and laboratory experience, to have demonstrated that it is an adjuvant of the greatest value to the other forms of cauterization, increasing the efficiency and lessening the reaction. The application of the crystals or concentrated solution to a bare or eschared surface prevents all putrefactive changes, almost wholly does away with febrile consequences, and promotes rapid, comfortable healing. Further, his employment of it in ozæna cases has not only speedily controlled the odor, reduced crust-formation, and hastened improvement, but has even led to so decided a hypertrophic tendency of the sclerosing surfaces as to demand at times reduction by decided cauterization. In acute coryza he has employed weak solutions (1 to 1000 to 2000) by instillation or spray, with prompt and safe resolution after the brief increase of secretion, and otitic consequences have seemed especially rare in cases thus antiseptically treated. He cautions against strong applications until the tolerance and inadequacy of weaker solutions have been proved; and others will do well to be more conservative than he now is, since he sometimes insufflates crystals into the Highmore or ethmoid sinuses. While the conditions which he selects for its use as a cauterant seem those in which still milder measures would succeed, and his view is generally rather roseate, trichloracetic acid would seem to have a special place as an aid in other cauterizations, and may prove our most valuable medicament in combating the obstinate ozænatous conditions.

INTUBATION OF THE AUDITORY CANAL FOR STENOSIS AND FURUNCLE.

In the *Annales de l'Oreille*, etc., for December, Dr. Courtade reports some very satisfactory results in the treatment of inflammatory stenosis of the meatus by the elastic pressure of a short piece of rubber tubing, and claims exceptional value for the method. The idea of elastic pressure is undoubtedly good, and his means of applying it often the best possible. Pressure has been the reviewer's main dependence for the promptest possible relief of the pain and its exciting inflammation, although it may seem rather paradoxical to fight pressure-pain by pressure; yet the relief is rarely slow of attainment, extension is lessened, if not prevented, and the unknown and perhaps serious condition in the depths of the canal is promptly made accessible to study and treatment. Only when the stenosis is accompanied by a deeper suppuration, which may not be safely clogged by a tampon in the canal, does a tubular compress offer a radical advantage, for the conical wedge of cotton, well covered with the yellow-oxide ointment, serves to gently and persistently afford the desired compression and rub in the medicament with every motion of the parts, as in each movement of the jaws. The germ theorists will find no better germicide for the purposes of disinfection than this affords, while it is admirably stimulant and resolvent.

In the majority of the cases of stenosis other than furuncular, there has been, and often still persists, a suppuration of the tympanum, and sealing of the meatus may then be precarious. Tubes have then their great advantage, though not exactly for Courtade's reason, that cleansing cannot be adequately done by more ordinary methods. One who knows how to properly syringe the auditory canal (it is a pity and a shame that so few do) need have little difficulty in fairly douching the whole canal. A small speculum gently used as a dilator will

overcome almost any inflammatory swelling which does not demand operation, and the syringe can be used with full effect. To maintain the dilatation a tube may be well employed, and the soft elasticity of caoutchouc may surpass a quill or other rigid tube. Dr. Courtade makes no mention of the device—sometimes very valuable—of stretching the tube in introducing it, so as momentarily to reduce its volume; then its expanding tendency is far more powerful, as it needs to be when the stenosis is annular, firm, and fibrous. This may be accomplished by passing long, delicate forceps through the tube to grasp the farther end, and exercising firm traction upon the nearer end until the other is well beyond the stricture. The hour-glass form of the compressed tube serves then the additional valuable purpose of anchoring it securely at the desired place until the reduction of the swelling sets it free. Too hasty removal of the tube or compress may easily permit relapse.

TREATMENT OF CANCER OF THE STOMACH.

PRIEUR (*La Tribune Médicale*, No. 12, 1894) holds that three drugs are particularly efficacious in the treatment of cancer of the stomach,—condurango, sodium chlorate, and aristol.

Condurango has been known since 1871 as a remedy in the treatment of cancer. Friedreich reported a surprisingly rapid action. Rees, later, out of fifty cases, could not fairly attribute any beneficial effects to the drug, excepting in three cases. This medicine may be administered in the form of the wine, a tablespoonful five or six times a day shortly before meals, or the tincture may be employed, a teaspoonful three times a day. Although this drug has no specific action, its influence upon the appetite and upon the digestion is sufficiently marked to justify its use in the treatment of cancer.

Chlorate of sodium has recently been recommended by Brassaud. He gave it in doses of from 2 to 4 drachms, and, as a result, noted cessation of hemorrhage, increase in weight, diminution in swelling, cure of vomiting, and return of appetite. One patient gained twenty-five pounds in six weeks. Albuminuria must be considered a contraindication to the use of this drug. Aristol, in doses of 1 to 2½ grains daily, is used simply as an antiseptic.

The symptomatic treatment of cancer is also of great importance. Alimentation should receive first consideration. A vegetarian diet which minimizes the work of the stomach sometimes serves an excellent purpose. As a rule, meat is not borne by these patients. White meat of fowl, fish, and soft-boiled eggs can, however, often be taken. Milk is nearly always well borne. When this begins to fail, koumyss should be substituted. Nourishment administered three times a day is sufficient. Frequent administration of small quantities simply increases suffering.

Since the stomach contains no hydrochloric acid, this should be administered by the mouth half an hour after meals as a digestive, and as an antiseptic when the stomach is empty,—that is, in the morning on rising and in the evening on retiring. Bicarbonate of sodium may be given, but always in small doses and before meals, since, thus administered, it increases the secretion of gastric juice. If given after meals in full doses it diminishes the secretion. When ulceration takes place, the administration of hydrochloric acid must be dropped and pepsin and pancreatin given. To combat the anorexia, condurango should be tried first, this failing, simple bitters are indicated. Thus, the following formula may be given:

℞ Nux vomica, f℥ss;
Chloroform, f℥ss;
Tincture of gentian, q. s. ad f℥iii.
Sig.—f℥i three to six times daily before meals.

Or chloroform may be given in 20- or 30-drop doses. It should be administered half an hour before meals.

Vomiting, when it is reflex and irritative, as in the beginning of the affection, is treated by cocaine or morphine. These drugs are given according to the following formula:

℞ Morphine hydrochlorate, gr. iv;
Cherry-laurel water, ℥iv. M.
Sig.—5 drops is required.

Or,

℞ Morphine hydrychlorate,
Cocaine hydrochlorate, of each, gr. iv;
Cherry-laurel water, ℥iv.
Sig.—5 drops is required before meals.

If the vomiting comes from dilatation of the stomach or atony, full doses of strychnine should be administered. When from imperfect digestion, meat should be dropped from the diet and hydrochloric acid and pepsin given. When vomiting comes from obstruction, lavage of the stomach represents the best treatment. Properly carried out, it gives great relief to symptoms and prevents dilatation. Often following the washing out of the stomach the patients will gain from ten to twenty pounds. One- to two-per-cent. solution of chlorate of sodium, one-half-of-one-per-cent. solution of

salicylic acid, or two-per-cent. boric-acid solution may be employed. Contraindications to lavage are hæmatemesis, gastrorrhagia and acute inflammatory symptoms, and profoundly-marked cachexia.

When alimentation is rendered absolutely impossible, nutrient enemata should be administered. The lower bowel should first be emptied by a large injection. All injections administered should be digested or at least contain digesting materials. Thus, if milk is employed, the water and salts alone are absorbed. Experimentally it has been determined that if two dogs are starved and one is given copious injections of broth or soup and the other nothing, they will both perish at about the same time.

Schmitt advises defibrinated blood one-quarter of a pint at a time. Flint orders a little over a pint of a mixture made up of finely-chopped beef, 300 parts; fresh pancreas, 50 parts; and water, 200 parts. A quarter of this is given each time.

As to surgical intervention, Billroth, who has a record of twenty-eight pylorectomies, records two cases of survival, one four and a half years after operation, the other two and a half years after.

The author states that, even if the surgeon successfully removes a cancer, and this is not followed by recurrence, the atrophy of the mucous membrane which always accompanies this growth progresses, the absence of the hydrochloric acid persists, and the patient dies of degenerative lesions of the stomach.

TREATMENT OF CHRONIC URETHRITIS.

LYDSTON (*Journal of Cutaneous and Genito-Urinary Diseases*, No. 139, vol. xii.) holds that by far the greater proportion of cases of gleet require anterior internal urethrotomy. When the patient objects to the operation he should be informed that all other measures are in the nature of a compromise.

When the inflammation is localized in the bulbo-membranous portions of the urethra, topical applications are necessary. He prefers a syringe holding half an ounce and the ordinary Ultzman instrument, using, of course, solutions of nitrate of silver of comparatively feeble strength.

The passage of a steel sound is to be commended, but copious antiseptic injections represent by far the best method of treatment of both anterior and posterior inflammation. The strength is varied according to the individual tolerance. In order of merit he places permanganate of potassium, nitrate of silver, and bichloride of mercury. The permanganate is used in the strength of 1 to 5000 to 1 to 15,000; nitrate of silver from one-half to one per cent. These irrigations are made by means of a short urethral nozzle. Rheumatic, gouty, and syphilitic diatheses must always receive appropriate general treatment. Certain cases are practically incurable. Sometimes absolute cessation of treatment is the best possible procedure that can be advised.

TREATMENT OF GONORRHŒA IN WOMEN.

LUTHER (*Sammlung Klinischer Vortrage*, Nos. 82 and 83), after a careful review as to the etiology, symptomatology, and pathology of gonorrhœa in women, proposes the following prophylactic measures:

Regulation of prostitution; legislation by which all professional harlots should be required to live in buildings provided for the purpose. A change in the method of examining women. Compulsory examination of all men coming to a brothel; enforced punishment of all who, knowing they are suffering from venereal disease, expose another person to contagion without a certificate of health from a reputable doctor. The right of summoning physicians to testify as to sexual infection, excepting when this takes place in the marital state. Requiring the monthly nurse, in virtue of her authority, to report all venereal diseases of which she becomes cognizant, except when they occur in the persons of married women. The organization of a corps trained in methods of scientific examination, and especially in instruction of the monthly nurse as to diagnostic signs; release of the medical commissioner from the performance of the duties of a doctor.

These highly practical methods of prevention would scarcely be proposed from other than a German source.

CASE OF EPILEPTIFORM TRIGEMINAL NEURALGIA TREATED BY HORSLEY'S OPERATION FOR NEURECTOMY OF THE INFERIOR DIVISION OF THE FIFTH NERVE.

MAYO ROBSON (*British Medical Journal*, No. 1716) reports the case of a publican of the age of sixty, who suffered for fifteen years from severe agonizing paroxysms of pain shooting down the right side of his face in the course of the inferior dental nerve. The paroxysms

only lasted about half a minute, but recurred generally about every half-hour or at longer or shorter periods, and were brought on by eating or at times even by talking. He had his teeth removed on the advice of his doctor, and took various medicines at the hands of several medical men, without any real relief. Seven years ago Mr. Robson divided the inferior dental nerve from the inside of the mouth, which operation completely relieved him for two years. The attacks then recurred after exposure to cold, and soon became as severe as before. He was readmitted into the infirmary, when the lower jaw was trephined by Robson opposite the last molar tooth, and half an inch of the right inferior dental nerve removed, giving complete relief for four years, or until eight months ago, when the attacks returned after exposure to cold and damp.

He was readmitted January 26, 1892, suffering from severe paroxysms of pain in the right side of the face, not only shooting down in the course of the inferior dental nerve, but radiating all over the right half of the face. They lasted about twenty seconds, occurred on an average every quarter of an hour, and were brought on by eating and talking.

In the early part of February another operation was performed. Incision was made a little above the upper border of the zygoma, extending forward for about an inch and a half, another downward from this behind the ascending ramus of the jaw, and another from the angle of the jaw along the lower border for about an inch. The flap thus marked out was reflected with the subjacent fat; the branches of the seventh nerve and the parotid duct were exposed, and the interval between them defined. The fascia was then divided, the gland pushed aside, and the masseter muscle exposed. The fibres of the masseter were divided transversely, so far as they were in the way, and retracted. The periosteum was then raised from the subjacent bone, the sigmoid notch and its boundaries well defined, and all bleeding stopped. A ⅓-inch trephine was used, and a piece of bone taken out of the jaw just below the notch, so as to deepen it; a second piece was then removed, and then a third, and on it was found the groove for the entrance of the inferior dental nerve. On sponging out the cavity and getting the wound as dry as possible, the nerve could be seen lying at the bottom.

An attempt was made to ligature the internal maxillary artery, but, on account of its great depth, this was found impracticable, hence pressure-forceps were applied and left on. It was not necessary to divide any extensive portion of the internal pterygoid muscle. The nerve was grasped with a pair of pressure-forceps and drawn downward, when a piece three-eighths of an inch in length was removed from just beyond the foramen ovale. The wound was well washed out with hot lotion (1 to 4000 perchloride of mercury solution), stitched up with silkworm-gut above and below, and left open in the middle for the forceps. Stitches were inserted into the middle of the incision, but were left untied until the clips could be removed. The wound was dressed with cyanide gauze and antiseptic wool. The pressure-forceps were removed the next day, when the loose sutures were drawn up and knotted. The stitches were removed on the tenth day, and the patient returned home on the twenty-seventh day quite well, having had no return of pain since the operation, the parts supplied by the inferior division of the fifth nerve being devoid of sensation.

A CASE OF ENTERECTOMY FOR GANGRENOUS BOWEL.

The following case is reported by PAUL (*British Medical Journal*, No. 1727, 1894) to refute the objection urged against his operation, that it would not always be possible to invaginate the enlarged proximal end of the bowel into the distal shrunken end, and in such cases would therefore be useless. He believes it unimportant which way the bowel is invaginated, though the downward method should probably be preferred when feasible.

S. R., aged fifty-one, came under his care at the Royal Infirmary on June 20, 1893. She was a rather delicate-looking woman; had never been very strong since she suffered from spinal curvature as a child of eleven. Early in December, 1892, a week after lifting a heavy weight, she first noticed a lump in the left groin; it was soft and painless, and had remained there ever since. For a few months she had been subject to attacks of vomiting near the menstrual period, unaccompanied by any change or pain in the lump. One of these attacks commenced very suddenly on June 14 and continued two days. On June 17 medical treatment was instituted with success until June 19, when vomiting returned and was inclined to become stercoraceous. There had been no movement of the bowels nor passage of flatus since June 14.

On June 20 patient was seen by the writer for the first time; the abdomen was slightly distended; there was severe umbilical pain, abso-

lute constipation, and vomiting, together with a small femoral hernia, tense but painless. Her general condition was quiet, pulse under 90, temperature 98.2° F. She was at once taken to the operating-theatre and anæsthetized. The sac was opened, exposing a small portion of bowel, which looked recoverable, but upon releasing the constriction and drawing down a little more bowel, the contents began to ooze through an ash-gray slough on the proximal side. The bowel constriction extended an inch and a half; on the distal side there was no distinct slough. Incision was made in the median line between the umbilicus and the pubis, a sponge introduced beneath the inner opening of the hernial sac, the bowel cleansed in the sac, reduced with the left hand outside, and rapidly withdrawn from the abdomen with the right hand, previously placed inside to receive it. The peritoneum remained clean during the process. The bowel was then clamped above and below, the injured part quickly cut out with the scissors, the bleeding-points tied, and one of Paul's bone tubes (made of decalcified bone. For detailed description of Paul's method, see *Lancet*, May 30, 1891), one inch by one and a quarter inches, sutured into the upper end. The upper end was dilated and thickened, and it proved impossible to invaginate it into the shrunken lower end. The tube was, therefore, changed for a smaller one (five-eighths of an inch by one and a quarter inches), which was sutured into the lower end. The traction thread was passed, the cut ends attached, and invagination performed. The bowel was invaginated upward instead of downward, a variation which was not found to increase the danger in the original experiments on dogs. As the traction thread had been passed through distended and, perhaps, partially paralyzed bowel, the needle puncture was secured with a single Lembert suture. Fine green catgut was used for all internal sutures, and fishing-gut for the abdominal wall. The abdomen was closed without drainage, after sponging out of the peritoneal cavity a little blood-stained serum which was present before the operation. The hernial wound was closed above, the lower part being left open for drainage. The entire operation, including anæsthetization, lasted one and a half hours. Patient promptly recovered from slight shock of operation. Vomited a little during the night and complained of pain in the back. She progressed favorably until the eighth day after operation, when she had an attack of pain and sickness, apparently due to excess of food, from which she promptly recovered on lessening the amount given. The highest temperature reached was 99.2° F. on the evening of the sick attack. Six weeks after operation she left the hospital cured. Half a year later had had no return of trouble and pursued her avocation of nursing.

In the same number of the *British Medical Journal*, HORROCKS cites a case in which excision of intestine for malignant disease and circular enterorrhaphy by Paul's method was successfully performed. The case is as follows:

C. H., a married woman, aged thirty-eight, was admitted to the Bradford Infirmary on August 29, 1893, with obstruction of the bowels. She had been an in-patient in October, 1892, with similar symptoms, which were relieved by starvation and opium. She suffered almost constantly from severe abdominal pain, shooting round the loins to the back. The pain was spasmodic, sometimes lasting several hours, and when very severe caused emesis. The bowels were usually relaxed, but during and after the severe attacks of pain they were confined, sometimes for several days. She had had four children; menstruation was painless and regular. She showed no signs of general wasting, though of spare habit. A systolic bruit was heard at the apex, which was not displaced. The abdomen was somewhat full at the lower part, with the umbilicus everted and the skin marked with atrophic scars. The percussion-note was normal over the abdomen. Above Poupart's ligament on the right a solid tumor was felt; it consisted of two parts, divided by a vertical groove.

By vaginal examination the uterus was found displaced downward, with cervix pointing towards the sacrum. Occupying the right fornix and extending in front of the uterus was a rounded swelling, which was continuous with the tumor felt above the pubes. This mass felt hard. It was divided into two parts by a groove and moved independently of the uterus.

On September 29 an exploratory abdominal operation was performed, in which the tumor was found to implicate a considerable portion of the small intestine; the wound was closed and healed without complication. On October 19 the writer operated, the operation lasting an hour and twenty minutes, with chloroform anæsthesia for the first twenty minutes and ether for the remainder of the time. An incision three inches in length was made in the median line rather above the umbilicus. The tumor was adherent to the abdominal wall, along the line of the old scar, which was below the fresh incision. The adhesions were mainly broken down, but the most adherent

part of the abdominal wall was cut away with the growth. The tumor was then drawn out of the abdomen and the opening packed with antiseptic cloths. The intestine beyond the growth on each side was emptied, and an elastic tube was passed through the mesentery around the gut. A V-shaped piece of mesentery, containing enlarged glands, was separated and the bleeding vessels tied. The bowel was now cut across transversely on each side of the growths and the implicated intestine with its attached mesentery removed. A Paul's bone tube was inserted into the open end of the intestine of smaller lumen and the free margin of the bowel stitched to the end of the tube with continuous silk suture; the thread was passed through the holes in the tube and the muscular and peritoneal coats of the intestine. Additional stitches were inserted at the mesenteric attachment. The other cut end of the bowel was now brought into apposition, after the threaded needle connected with the tube had been passed through the intestinal wall from within out, about three inches from the incised extremity. The two ends of the bowel were now stitched together by a continuous Lembert silk suture. By traction on the thread and manipulation of the bone tube the bowel was invaginated for about three-quarters of an inch. It was fixed in this position by a continuous silk suture, which included only the peritoneal and muscular coats. The needle was now cut from the traction thread, which was drawn into the gut. The margins of the mesentery were stitched, partly by interrupted, partly by continuous sutures. The extremity of the vermiform appendix was inflamed and adherent to the tumor. The appendix was ligatured near its proximal end, the distal end removed, and the stump closed in by three silk sutures. The abdomen was cleansed and a glass drainage-tube inserted, with its lower end reaching the bottom of Douglas's pouch. The abdominal wound was closed with silkworm sutures, the end of the drain projecting at the lower end of the wound.

The intestine removed was about thirty-nine inches long. At two places its wall was invaded by growth; the growth was about the size of an orange, consisting of tumor and convoluted intestine, fixed by firm adhesions. The lumen of the intestine was much narrowed and the mucous membrane ulcerated at this point. There was a second growth of smaller size, separated from this by healthy intestine. The mesentery showed several enlarged and infected glands. The growth was a large round-celled sarcoma rising from the submucous tissue.

The patient quickly rallied from the operation, and was discharged November 23, 1893.

PRESCRIPTIONS.

Carbolic Acid in Pruritus.—The following preparation is spoken of highly:

℞ Acid. carbolici, ʒiss;
Liq. potassæ, ʒi;
Ol. lini, ʒi;
Ol. bergamot, ʒiii. M.
Shake well before using.

Simple Remedy for Coryza.—*Revue Mèdicale* gives the following as an excellent remedy for coryza: A ripe lemon is taken and some of its juice squeezed into the palm of the hand. The juice is then forcibly inhaled up the nostrils. Two or three such inhalations will suffice to cure an ordinary cold.

Nitro-Glycerin in Sciatica.—Dr. Lawrence (*Revista de Ciencias Medicas de Barcelona*) reports the case of a carpenter, aged fifty-two, who suffered for several weeks with sciatica. In order to alleviate the pain he had become a morphine user and could not abandon the habit. After trying a multitude of drugs, he gave him a 1 to 100 solution of nitro-glycerin, 1 drop three times a day, gradually increasing the dose to 5 drops. Relief was almost immediate, and in ten days he could resume his work, completely cured.

Epistaxis.—Plethoric cases are relieved by:

℞ Tinct. aconit., gtt. viii;
Liq. ammon. acetat., ʒi. M.
Sig.—Teaspoonful every half-hour.

In anæmic cases may be employed:

℞ Strychniæ sulphat., gr. ⅓;
Tr. ferri chlor., ʒii;
Vini ergotæ, ʒss;
Syr. simplices, ʒiss;
Aq. destill., q. s. ad ʒvi. M.
Sig.—Teaspoonful three times a day.

—*Medical Press and Circular*, January, 1894.

HYSTERECTOMY BY THE PRATT METHOD.

Lanphear (*Journal of the American Medical Association*, vol. xxii. No. 4) performed the above operation in a case of uterine tumor in which laparotomy disclosed a uterus so enlarged and fixed in the pelvis that it was impossible to remove it by abdominal hysterectomy. The patient was anæsthetized; the perineum and the peritoneal body slit through to give room; the uterine arteries temporarily tied by the method advocated by Dr. F. H. Martin. The tying

of the arteries is an innovation of Lanphear's, Dr. Pratt claiming it to be unnecessary. The uterine canal was packed tightly with gauze, then cut with a knife entirely around the cervix through the mucous membrane and the submucous tissue, until the free and loose connective tissue which envelops the body of the uterus was reached. The fingers were then introduced within the slit and rapidly tore away the uterus and its tumor from the peri-uterine structures. This was rapidly accomplished. Caution should be exercised in approaching the fundus, lest the peritoneum which covers the uterus at this point be penetrated. Very little hemorrhage occurred. For the removal of the uterus and tumor not more than ten minutes were required. The whole operation, including sewing up of the perineum and packing the cavity with iodoform gauze, can be accomplished within twenty-five minutes.

This operation will probably prove an admirable one for cases of this kind, and it is possible that it is also applicable in cases of early epithelioma of the cervix.

SURGICAL TREATMENT OF VARICOCELE.

SEBILEAU (*Gaz. de Médicale de Paris*, February 24, 1894), after giving the ordinarily accepted indications for operation in case of varicocele, holds that the same method of treatment is not suitable for all cases. When the varicocele is small, the dilated veins being of normal consistence and regularly distended, simple resection of the scrotum is followed by the best results, although in combination with this there should also be resection of the lower segment of the posterior group of veins. When, however, the enlarged veins are greatly enlarged and extend the whole length of the cord, when these veins are partially dilated, indurated, and knotted, a double operation is necessary,—that is, not only is it essential to resect the scrotum and excise the posterior funicular group, but the anterior group must also be operated upon. As palliative means in the non-operative cases, cold douches are recommended to the region of the scrotum and perineum. For these douches, one-per-cent. tannin solution is advised; wearing a suspensory, careful attention to the condition of the bowels are also insisted upon as cardinal points. Resection of the scrotum is a safe operation, the author holds. The parts are prepared as for ordinary surgical intervention. The redundant tissue is pinched up, seized in a clamp, and cut off. Only enough to cover the testicle is left. After resection the clamp should be removed, hemorrhage checked, and the wound sewed. The wound is not drained. After having checked immediate bleeding, an examination should be made of the veins lying behind the vas deferens. These are readily seen and separated through the large wound incident to the resection of the scrotum; each should be separately seized, tied above and below, and the segment between the ligatures cut out. When the varices have reached their largest development, after resection of the scrotum and excision of the posterior group the wound is sewed as before. An incision is then made along the course of the cord from the external inguinal ring. The various layers of cellular tissue are dissected off, exposing the anterior group of veins surrounded by a little fat. In excising this group the deferens canal and the spermatic artery must be avoided. The artery lies behind the anterior group of veins, and behind it, in turn, lies the deferent canal, together with the deferential artery; and finally, behind these structures is situated the posterior funicular group of veins with the arteries of the cord. It is sometimes difficult to avoid the spermatic artery, since it is so small that its pulsation cannot be detected and is completely concealed by the large veins. Perhaps the best way of avoiding seizing this artery is not to include the whole anterior branch of veins in the thread.

CAMPHOR NAPHTHOL IN THE TREATMENT OF TUBERCULAR ADENITIS.

RABOUL (quoted in *Centralblatt für Chirurgie*, No. 11, 1894) warmly commends camphor naphthol in the treatment of tubercular adenitis. In some reported cases the favorable results were most striking; in others abscess and fistula followed. It is claimed in favor of this method that there is no danger of intoxication and the treatment is practically painless. It must, however, be long continued. It is interesting to note that Ménard and Calot have reported cases of intoxication following injection of camphor naphthol in abscess cavities. The patient suffered from frequent rapid pulse, loss of consciousness, and epileptiform attacks. The quantity of the drug injected was about 6 drachms. This patient recovered. In another case, eight years of age, 1½ ounces of the solution were injected. In the third case, aged twelve, 5 drachms. In these last two cases life was saved by freely opening the cavity and washing it out on the first appearance of toxic symptoms.

Reviews.

OUTLINES OF OBSTETRICS. By Charles Jewitt, A.M., M.D. Edited by H. F. Jewitt.
Philadelphia: W. B. Saunders, 1894.

This work is a syllabus of the lectures delivered at the Long Island College Hospital, and if one can judge of the teaching of the institution from such a syllabus, the instruction in obstetrics in Brooklyn must be very good. Indeed, the publication of Dr. Davis's somewhat larger book at the Jefferson College, which we have reviewed elsewhere, that of Dr. Norris's, which is a syllabus of Professor Hirst's lectures at the University of Pennsylvania, and this one of Professor Jewitt's may be taken as types of the best teaching of this subject to be found anywhere. Jewitt's book is not in the style of the quiz compend, nor is it as full and complete as that of Dr. Davis's. It is not in the form of questions and answers, as are many of the works issued by this publisher, but may be considered as a very condensed epitome. We notice that directions are given for the hypodermic injection of half a drachm of the fluid extract of ergot to prevent post-partum hemorrhage, but nothing is said about the particular method of employment which should be resorted to to prevent unnecessary irritation following such a means of treatment, and we can see no reason why the earlier administration of the drug by the mouth would not in the majority of cases be equally serviceable.

HOW TO USE THE FORCEPS, WITH AN INTRODUCTORY ACCOUNT OF THE FEMALE PELVIS AND OF THE MECHANISM OF DELIVERY. By Henry G. Landis, A.M., M.D. Revised and enlarged by C. H. Bushong, M.D. Illustrated.
New York: E. B. Treat, 1894.

This book by the late Dr. Landis, whose career in the medical profession was so full of promise, has been brought up to modern ideas by Dr. Bushong, and presents in more detail than can be found in the ordinary work on obstetrics the subject of which he treats. We cannot, however, see that there is any reason for the average practitioner purchasing a separate monograph on this subject unless he intends to devote himself entirely to obstetrical work. To such the book can be cordially recommended.

A MANUAL OF PRACTICAL OBSTETRICS. By Edward P. Davis, A.M., M.D. Second edition, revised and enlarged. Illustrated.
Philadelphia: P. Blakiston, Son & Co., 1894.

There have been few books of this size published in this country or abroad which have been received with such universal favor by reviewers as has this one, which possesses the advantage that its author has not made a condensation from standard works, but has written of obstetrics as only a practical obstetrician of large experience can write. A number of original full-page illustrations are found through the work, and the advice which is given on disputed points in treatment is at once sufficiently progressive to show that the author is in touch with the latest improvements in his art, and yet is governed by the conservatism so necessary to the practitioner of this branch of medicine. We predict for the second edition of Dr. Davis's work an even greater success than that which was obtained by the first.

CLINICAL DIAGNÓSIS. By Albert Abrams, M.D. Third edition, revised and enlarged. Illustrated.
New York: E. B. Treat, 1894.

We regret that the publishers of this work have placed upon the market such a poor example of American book-making, so far as the printing and illustrations are concerned. Many of the pages are not only crooked, but badly blurred or so imperfectly printed as to render reading difficult. The book consists to some extent of abstracts from articles published elsewhere by Dr. Abrams, and is a curious mixture of physical diagnosis, practice of medicine, and therapeutics. The fact that it has reached its third edition proves that it must have been popular with some practitioners, and naturally there is much in its pages which is of value. On the other hand, there are books of the same size and cost which are certainly better.

LECTURES ON GENITO-URINARY DISEASES. By J. C. Ogilvie Will, M.D., C.M., F.R.S.E. With numerous illustrations.
London: The Scientific Press, Limited, 1894.

The five lectures published in this book are by no means intended to cover the entire subject of genito-urinary diseases, but rather to express the author's beliefs and experience gained from the study of certain selected cases.

The first lecture deals with urethral fever. Will holds that catheter fever is due to putrefactive germs which gain access to the bladder by regurgitation of air through the instrument. In this belief he probably stands alone. As the surest way of avoiding urethral fever, the application of cocaine to the urethra and the general employment of steel instruments are advised. Quinine is a drug in which much reliance is placed. A watery solution of sodium bicarbonate is referred to as a reliable antiseptic for washing catheters.

In the second lecture on the treatment of retention of urine, Syme's dictum that there is

no such thing as an impermeable stricture is supported. Continuous dilatation is advocated. As the best way of tying in a catheter, it is suggested that a small ordinary elastic band should be placed in the groove behind the corona glandis; two waxed silk threads are secured to the end of the catheter and passed under this band.

In the treatment of gleet kaolin is recommended. By mixing this with water or oil a thick paste is made. With this paste the urethra is filled by means of a common syringe. A bit of lint is placed over the meatus and retained there as a cork. This injection is allowed to remain in the urethra until the next urinary act, after which the process is repeated. The result is that friction of the inflamed surfaces is absolutely prevented, healing takes place, and the discharge ceases.

In the treatment of varicocele the open method with excision is preferred. Hydrocele should be treated by injections of iodine, this method failing only in exceptional cases.

The final lecture is devoted to the treatment of syphilis. Excision of a chancre is not commended. Mercury is administered before the manifestation of secondaries, and should be given continuously for six months and thereafter intermittently for two and a half years.

There is an appendix containing formulæ used in the treatment of syphilis.

This work, though not entirely modern in its teachings, represents the honest convictions of one who has evidently had large experience. It provides interesting and instructive reading to the general practitioner, and in the main mirrors the methods and beliefs of the present day.

BURDETT'S HOSPITAL AND CHARITIES ANNUAL, 1894. Edited by Henry C. Burdett.
London: The Scientific Press, Limited, 428 Strand, London, W. C., England.

This book is best described in its title-page as containing "a review of the position and requirements, and chapters on the cost of management, of the voluntary charities, and an exhaustive record of hospital work for the year. It will also be found to be the most useful and reliable guide to British, American, and colonial hospitals and asylums, medical schools and colleges, religious and benevolent institutions, dispensaries, nursing and convalescent institutions."

As will be seen from this abstract, it covers a very large amount of information, and to those interested in hospital management it will prove an invaluable guide.

Correspondence.

LONDON.

(From our Special Correspondent.)

Consultations at St. Bartholomew's Hospital.—My last visit to St. Bartholomew's Hospital happened to be on a Thursday afternoon, and, having finished the particular business on which I had come, I strolled in the direction of the operating-theatre, where I found one of the weekly "consultations" in full swing. To the already qualified man, or to the student shortly to take his qualification, I think there is no part of the hospital training likely to be of greater value, for here are presented all cases in which there is a difficulty in diagnosis, besides a great many which exhibit rare or unusual conditions. To show how highly these consultations are esteemed in the hospital itself, I need only add that every member of the staff who can do so makes a point of being present, and that the theatre is full from top to bottom of those eager to hear the opinions of their more experienced teachers.

The *modus operandi* is as follows: The patient whose case is to be discussed is brought in, and the notes of his case, including the history of the malady, so far as it can be ascertained, are read out by the surgeon, who draws special attention to the salient features and makes a statement as to its probable nature. All remarks, however, which might give pain or anxiety to the patient are carefully avoided. After this each member of the staff makes an independent examination of the patient, who is then taken back to his ward. The surgeon in charge of the case then states the diagnosis at which he has arrived and the treatment he is inclined to adopt, or, in cases of great difficulty, he states the various constructions which may, in his opinion, be put on the case and the reasons therefor. The other surgeons, in order of their seniority, then give their views as to diagnosis and treatment. Needless to say, there is often great divergence on both points, but no view is expressed without a full statement as to the reason for holding it.

The casual visitor may think that the mere hearing of opinions upon a case with regard to which he has had no opportunity of forming his own conclusions is of doubtful utility to him. If this view should strike him, I would only desire to point out that the "consultation cases" are an indication of the most interesting patients in the hospital, and that all the visitor has to do, if he takes a particular interest in any of the cases shown, is to afterwards visit the wards

with the surgeon, when he will have ample opportunity of making any personal examination which he may care for. Personally, I know of no portion of the post-graduate training which is of greater value to the young practitioner who will take the trouble to thus follow up a case, and in this manner acquire practice in differential diagnosis.

The Gynæcological Theatre at St. Bartholomew's.—In former letters I have given brief sketches of our Casualty Department and also of the department devoted to the treatment of cases by electricity. I have described, I hope impartially, the advantages and disadvantages of our out-patient system, and have done my best to give such indications of what goes on as to induce visitors to come and form their own conclusions. I now wish to make a few remarks on our arrangements for operative gynæcology, a subject which has of late years attracted an enormous amount of attention. And at the outset I would say that it is by no means held that the arrangements are the best which could possibly be devised; they are, however, probably as good as one can obtain without the erection of entirely new buildings. The present operating-theatre was built a good many years ago, at a time when the paramount importance of the strictest asepticity was not understood as it is now. Not so long ago it was held that any room would do for the performance of such an operation as that of abdominal section, provided a sufficient quantity of antiseptics, etc., were poured into and around the wound before and during the operation. Now it is the great object of every operator not to saturate his patient with antiseptics, which may of themselves both fail to kill microbes, and may so lower the resistance of the parts to which they are applied as to render them an easy prey to the bacteria which escape destruction. It is now sought to insure the perfect asepticity both of the room, the patient before operation, and of everybody and thing which may come in contact with her; and it is the more or less perfect realization of this idea which has, no doubt, contributed to the greatly increased measure of success attending abdominal operations of late years, although increased experience has, of course, also played an important part in bringing about the same end.

To return to my subject. "Martha" theatre was constructed when antiseptic surgery was the fashion. It has, therefore, many, but not all, of the advantages of the most modern operating-room. The floor is laid in closely-fitted, narrow teak boards; the walls are painted, so as to allow of frequent and careful cleansing, but they would have been decidedly better had they been, partly at least, tiled. The wash-basin is fitted with hot- and cold-water taps, and the waste is carefully trapped, the trap being fully exposed, so as to allow of the prompt detection of leakage. To avoid all possibility of sewer contamination, the waste-pipe discharges into the open air as quickly as possible. The theatre, which is about nineteen feet square, is lighted both by large side windows and by skylights. It is warmed by hot-water pipes and by a fireplace on the south side.

All the fittings of the room, even to the operating-table, are made, so far as possible, of glass and metal. The top of the operating-table is fitted, besides, with a large copper tray to contain hot water (130° F.), an important adjunct in the prevention of shock in cases of long exposure. The glass above this is covered by a clean sterile blanket, on which the patient is laid. There are two other tables of similar construction, to hold respectively the dressings and instruments. The furniture of the theatre is completed by a large glass irrigator, slung from the ceiling and capable of holding three gallons of sterilized water; an air-tight instrument cupboard, with glass shelves and metal pegs for holding instruments; and three sterilizers,—a small, shallow, oblong one for boiling instruments, a large barrel-shaped one, holding nine gallons, for preparing sterilized water, and an oval dry sterilizer for sterilizing dressings. This last is fitted with a perforated false bottom to prevent the dressings from becoming scorched from coming into direct contact with the possibly overheated copper bottom. All other instruments are, it is needless to add, so made as to be capable of thorough cleansing and sterilization. On the evening before an operation the theatre is specially prepared. The windows and ventilators are opened and left open all night, the floor is carefully polished, and the walls, basins, and all other things washed with sublimate. Sterilized water is prepared, and dressings are placed in the sterilizer, heated for twenty minutes to 356° F., and left there until required. All these precautions are adopted because it is the conviction of the operator that the time when septic conditions are introduced is that during which the abdominal wound is open, and that once this is closed the septicity or asepticity of the operation is practically determined. Precautions are completed, so far as the theatre is concerned, by again going over everything on the morning of the operation with a cloth damp with sublimate.

Such is our operating-theatre and the pre-

cautions to insure asepticity. The results obtained lately have been in every way most encouraging. I hope, however, to return to these matters on a future occasion.

"CEREBRINE" AGAIN.

To the Editors of the THERAPEUTIC GAZETTE:

DEAR SIRS:—I have made a chemical examination of the "cerebrine" so called of Dr. William A. Hammond, to the single end of determining the presence or absence of nitro-glycerin. I have made this examination (1) of the article furnished in the market as Dr. Hammond's "cerebrine," and (2) of the preparation made by me, according to Dr. Hammond's published directions, in process of completion.

1. The article of "cerebrine" of the market I obtained for analysis directly from Hegeman & Co., 196 Broadway, New York, on September 15, 1893, and on September 25, 1893. The article as I received it was contained in bottles holding five to six centimetres when full, and labelled "Sterilized Solution of Cerebrine. Dose, 5 minims dropped on the tongue or hypodermically. Prepared by Columbia Chemical Company, 90 South Fifth Avenue, New York." Diagonally across the face of the label is the red script "William A. Hammond." The contents of eight of these bottles were used in the chemical examination. I find that this article—the "cerebrine" obtained from the market as above—contains nitro-glycerin. I reach this conclusion from the concurring evidence of the several chemical reactions of nitro-glycerin. Some of these reactions are clearly given by the cerebrine liquid just as it is taken from the bottle, and all of the reactions of nitro-glycerin are obtained after due procedure for its separation. When so separated the concentrated product gives the characteristic reactions of nitro-glycerin with vivid intensity; and I find that the concentrated product agrees with nitro-glycerin in its physiological effect, as a poison. The procedure for separation of nitro-glycerin from the "cerebrine" is fully effectual, so that the remaining cerebrine liquid offers a negative response to all the qualitative tests for nitro-glycerin.

2. The preparation of "cerebrine," by the directions published by Dr. Hammond, I placed in maceration on October 14, 1893. I have macerated the brain of the ox and the contained blood in a mixture of equal parts of absolute alcohol, glycerin, and a saturated solution of boric acid in water, with frequent agitation and strong pressure, five months and twenty days, and have then made chemical examination of a portion of the product. The product, at this period of maceration, perfectly agrees in appearance every way with the "cerebrine" which I obtained from Messrs. Hegeman & Co. last September. But the "cerebrine" of my preparation, under the directions published by Dr. Hammond, with the time of maceration just stated, does not contain a trace of nitro-glycerin. It fails to give the slightest reaction for ethereal nitrates of any sort, and the procedure for separation of nitro-glycerin in concentration yields nothing but negative results when subjected to all tests for this body.

Yours, very truly,

ALBERT B. PRESCOTT,

Professor of Organic Chemistry in the University of Michigan.

Notes and Queries.

AMERICAN MEDICAL ASSOCIATION.

The Committee of Arrangements has worked indefatigably on the matter of transportation rates, trying to get a round trip for a single fare.

By advice of Mr. T. H. Goodman, General Passenger Agent of the Southern Pacific Company, who furnished addresses, we sent out circulars to agents of all roads interested in the matter.

About one-half of those replying favored our petition, and promised to advocate it before their respective associations, through which all such matters must be arranged.

The following communications from Mr. Goodman place the matter, as it now stands, in a clear light:

"SAN FRANCISCO, March 16, 1894.

"DR. R. H. PLUMMER,

"*Chairman Com. of Arrangements, A. M. A.,*

"*652 Mission Street, San Francisco.*

"DEAR SIR,—This morning's mail brings us your yesterday's letter, handing for our perusal three letters from Eastern railway officials. Having read the letters you sent, we return them herein, and beg to emphasize our previous statements to you in person and by letter, that the Trans-Continental roads have virtually done what you ask,—namely, accorded a one-way rate.

"In other words, the rate for a thirty-day ticket from Missouri River points to San Francisco is $60.00. Excursion—that is, round-trip—tickets, Missouri River points to San Francisco and return, are being sold to-day at

a rate of $65.50. Such tickets require the going trip to be made within fifteen days from date of sale, and the return trip within fifteen days after the day upon which the ticket is signed here in presence of a railroad agent, but in no event later than July 15 next.

"We have told you that within the State of California we ignore this fifteen-day limit on both going and returning trips; in other words, that the holders of the tickets are at liberty to move at will within the State of California within the life of the ticket, and that the fifteen-day limit returning is not enforced west of our terminals at Portland, Ogden, and El Paso.

"You have asked our permission to state positively that these Midwinter-Fair rates would be in force at the time attendants at your convention will want to move westward. We have replied that the traffic is west-bound traffic, and that we do not control the matter. You will doubtless, however, recollect our telling you that this rate would, in all probability, hold until after that period. We gave you our reason for that statement,—namely, that one of the roads had announced that it would continue the sales up to June 30.

"We appreciate your desire for an authoritative statement in this regard. As we cannot make it, we write you that we feel you are quite safe in stating the fact that such rates have been announced, and that the sale would continue until that date.

"We beg to again call your attention to one point, which is quite material in this matter. The Trans-Continental roads having virtually done what you asked, you should bring all the influence to bear that you can upon the roads east of the Trans-Continental roads. Those roads are, for the most part, the ones forming the Western Passenger Association, the Central Traffic Association, and the Trunk Line Association. The Western Passenger Association roads lie between the Missouri River and Chicago and St. Louis. You should go to them for a rate similar to our Midwinter-Fair rate. They tell you their rate will be $20.00, Chicago to Missouri River and back, and $12.00, St. Louis to Missouri River and back. As the single-trip rate, Chicago to Missouri River, is $12.50, and from St. Louis $7.50, you will see that their rates are not reduced nearly so much as the Trans-Continental road rates. Can you not through some of your profession at Chicago approach the general passenger agents of the lines leading from Chicago whose names we have given you? We think they will appreciate the importance of the occasion.

"One of our assistants has in hand the matter of reduced rates locally, and you will be shortly advised. Respectfully yours,

"T. H. GOODMAN."

Extracts from letter of February 12, 1894:

"The rates thus continued are as follows: $65.50 from Missouri River points, being Sioux City, Council Bluffs, Omaha, Pacific Junction, St. Joseph, Atchison, Leavenworth, and Kansas City; $77.50 from St. Louis, Cairo, Memphis, and New Orleans.

"The rates mentioned to you exceed the one-way thirty-day rates as follows:

"That from the Missouri River by $5.50, that from St. Louis, Cairo, Memphis, and New Orleans by $10.00, and that from Chicago ($85.50) by $13.00.

"We deem it but proper to here mention that if our Shasta route between San Francisco and Portland is passed over on either going or returning trip from Missouri River, St. Louis, or Chicago, the rate will be $15.00 greater.

"As on this occasion passenger movement is from the east to the west, it is but proper that the question of rates should be taken up with officials of Eastern roads. We suggest, therefore, that you correspond first with those who have charge of the passenger traffic of the so-called Trans-Continental Association roads. They are as follows:

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"For rates from the territory lying beyond the Missouri and Mississippi Rivers you should address: Mr. B. D. Caldwell, Chairman Western Passenger Association, Chicago; Mr. F. C. Donald, Commissioner Passenger Department Central Traffic Association, Chicago; Mr. L. P. Farmer, Commissioner Passenger Department Trunk Line Association, New York; Mr. M. Slaughter, Assistant Commissioner Southern Passenger Association, Atlanta, Ga."

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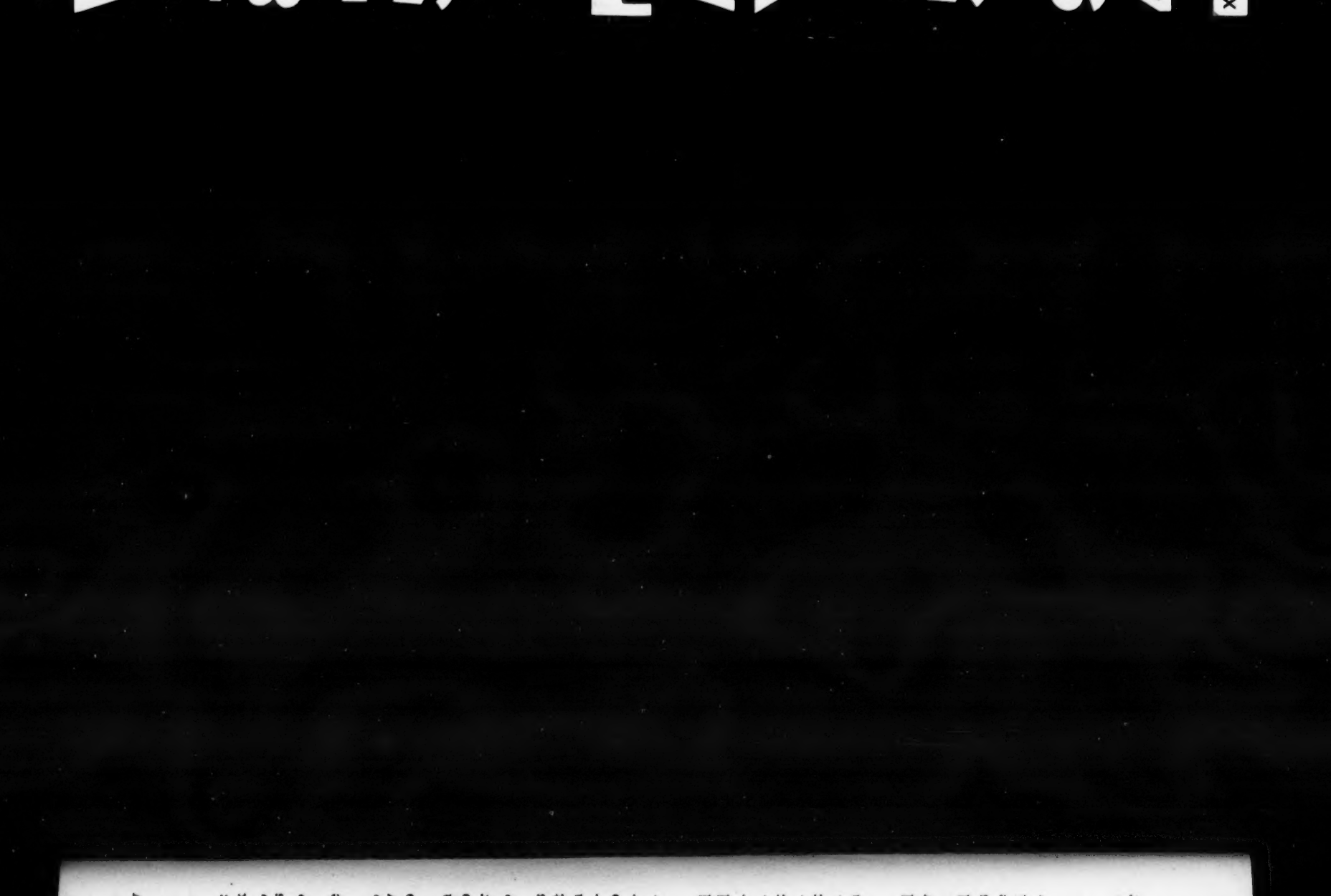
From the foregoing communications it will appear that, while we have not been wholly successful, if the roads between the Missouri River and Chicago and between Chicago and Atlantic points, where local travel far exceeds that over the Rocky Mountains, will give the same reductions as the roads from the Missouri River points to San Francisco, we will practically have a single fare for a round trip.

Cannot the profession in the East by united efforts secure these concessions?

The time is growing short, and chairmen of the different sections should send in their reports, etc., for insertion in the programme.

R. H. PLUMMER,
Chairman.

SAN FRANCISCO, March 25, 1894.